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March 1926 10 Cents

Beware the Moods of March—Surveying the Nation's Soils —Rat Control and the County Agent—in this issue

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YOU will find the above words inscribed upon a tablet of bronze in our reception room at 10 Bridge Street, New York.

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10 BRIDGE STREET NEW YORK CITY

Better Crops

The Pocket Book of Agriculture

The Whole Truth—Not Selected Truth

VOLUME VI NUMBER ONE

Table of Contents for March, 1926

Beware the Moods of March 3
Jeff's timely essay

Pooling Brains 5
A discussion by T. K. Wolfe

Nebraska's Corn Contest 7
Y. P. Bhosale reports the results

Tune in on This 9
P. M. Farmer introduces Sam Pickard

Surveying the Nation's Soils 10
A well told story by Frank George

The Montezuma Marsh 14
G. H. Brainard describes the swamp that became famous

Why Farm Electrification Drags 17
Arthur P. Chew finishes his article started last month

An S. O. S. for Corn 18
Danger ahead according to A. A. Burger

Fertilizers for Cotton 21
Information set forth by D. J. Burleson

The County Agent and Rat Control 22
James Silver would be rough on rats

Looking Ahead 25
A glimpse into 1926 *by A. B. Genung*

Budding and Grafting Apple Trees 27
T. J. Talbert tells how it is done

Partners in Honor 28
Honor to whom honor is due is the theme of V. T. Bartle's story

Who's Who of BETTER CROPS

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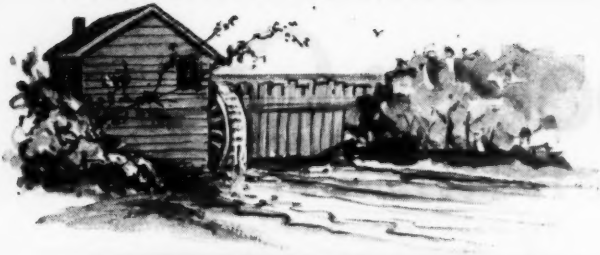

The height of bravery

Better Crops

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VOL. VI NEW YORK, MARCH, 1926 No. 1

¶ *A timely essay on a little studied subject*

Beware the Moods of March

By Jeff McDermid

ON a certain morning in March, 1911, I arose in a wonderful mood.

The bright sun and cloudless sky matched perfectly my unusually exultant mood—I gloried in a strange sense of power that thrilled and throbbed throughout my being and lent to me for the hour the wild spirit of a superman.

I admit here and now that this mood has been a stranger to me since—and that it was foreign to me on that fateful bright morning when the entire course of my life was changed. And, lest it be misunderstood, let me hasten to say that the mood was induced by neither love, liquor nor levity—it was simon pure and natural.

I was simply the innocent victim of a rare and seldom duplicated mood. I owned the world and planned with ill-concealed excitement and delight to shake it loose of all it possessed of value.

In this mood I approached my work. Before an hour had passed

I had unconsciously offended a wonderful old soul who, unfortunately for me had arisen that morning in a mood the opposite of mine —he felt himself growing old; and the sight of me cavorting around full of the essence of strong youth offended him to tears. The result was, as he was the man who signed my pay-check, that, in the vernacular, I received the "grand bounce"— was out of employment on the very day that I felt most able to cope with this world and its serious problems.

There I was—"a peacock one day, and a feather duster the next!" A victim of two rare moods indeed, and of a strange move of fate. The course of my life was changed, (although I later was glad that Fate had taken this seemingly unkind way of shaking me loose from a connection that ill suited me.) My whole philosophy was upset and my conception of the race of man sadly warped—all because a wildly excited mood, a pure stranger to me, had the whim to settle down upon my gay, youthful shoulders without invitation!

Next day, my throbbing head in my hands, I pondered over this matter of moods and resolved to study it. Peculiarly enough I was unable to find that any intelligent writer had given the subject the attention its importance deserved and I discovered that I was forced to study out the facts in a field where little research was available to the student.

For fifteen years I have been carefully observing and making notes on moods in myself and others with whom I have come in contact—how certain moods are induced, when they come, why they go, what effect they have had on my life and upon those of others. I have reached several interesting conclusions. * * *

Of one man we are accustomed to say, "He is very moody," and of another, "He is always the same," as if to divide the world into two different groups, here the victims of moods and there those singularly free.

As a matter of fact, it has been my observation that no man is free from the devastating effects of certain moods—all of us here below are subject to fluctuation in the mental stock-market, being never twice the same. Some, of course, are better able to conceal from the world the effects of their moods, and it is to these we pay the undeserved compliment, "They are always the same," when, if their private thoughts were made public we should suddenly discover that they were strangely akin to those of the visible moods.

One should not be ashamed to admit that he is visibly affected by certain phenomena—that he has certain moods, for to admit this openly is to prove that one is attuned to one of Nature's strongest laws.

I have often publicly admitted that my mind follows the sun; I am more or less gloomy on dull, cloudy days and become more natural and free when the sun shines. I had always thought that everyone, to a greater or lesser degree was similarly affected, when to my delight, a great psychologist told me that, should the sun not shine again for a year, we in that time would degenerate into a race of gloomy, despondent people!

And I am now sure that if the sun was completely hidden by clouds for as much as six months we would forget how to laugh, artists would find to their bitter disappointment that beauty had disappeared from the earth, inventors become wrapped in deadly inertia, their brains sterile of creative ideas and that writers would find their joyous ink soured into a dyspeptic bile!

(*Turn to page 62*)

Brains determined that an application of 1000 *pounds of fertilizer per acre paid better than* 500 *pounds*

Pooling Brains

By

T. K. Wolfe, Agronomist
Virginia Agricultural Experiment Station

IN this day and time when we hear so much about cooperation among farmers and the pooling of farm products the agricultural scientists can well afford to cooperate and pool their knowledge.

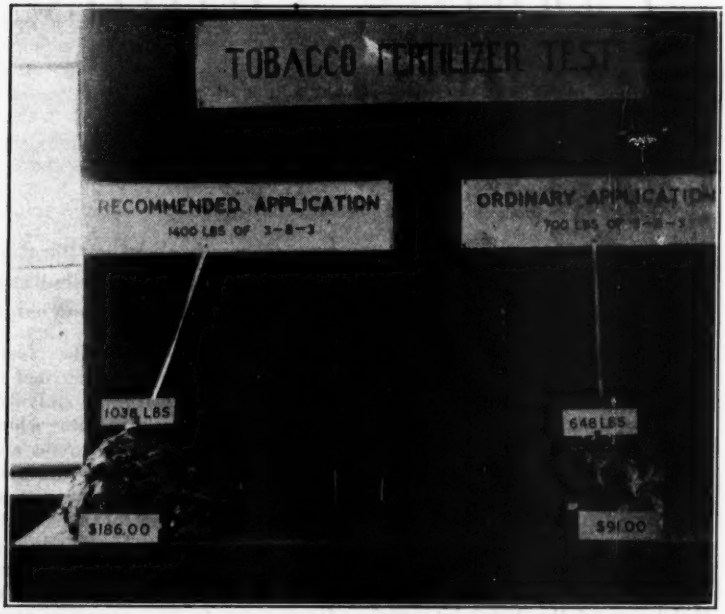
In fact the United States Department of Agriculture and the experiment stations of Virginia and North Carolina have cooperated and pooled their knowledge concerning the proper kind and amount of fertilizer to use on tobacco. In October a committee composed of Dr. W. W. Garner of the United States Department of Agriculture, Professor T. B. Hutcheson of the Virginia experiment station, and Professors E. G. Moss, L. G. Willis, W. F. Pate, and C. B. Williams of the North Carolina experiment station met in Raleigh, North Carolina and studied the fertilizer results which had been secured in Virginia and North Carolina with the different types of tobaccos. After a thorough consideration of the available data the committee made certain recommendations with reference to the fertilization of the tobacco crop to be grown on average soils in Virginia and North Carolina in 1926.

The committee first considered the fertilization of bright tobacco. This type of tobacco is grown on rather poor soils and in rotations which do not have a great tendency to build up the productivity of the soil. These conditions are necessary because the amount of ammonia must be limited for bright tobacco in order that a yellow color may be produced, and it is easier to give the proper amount of ammonia in a commercial fertilizer than through ordinary soil improvement.

THE committee recommended that where bright tobacco was to be grown on the relatively heavy bright tobacco soils such as are found in the Piedmont area that a fertilizer be used containing 8 per cent available phosphoric acid, 3 per cent ammonia, and 3 per cent potash. However, on very thin soils a fertilizer with the following analysis was recommended: 10 per cent available phosphoric acid, 4 per cent ammonia, and 4 per cent potash. On the lighter bright tobacco soils such as are found in the Coastal Plain section, it was recommended that the analysis of the fertilizer be as follows: 8 per cent phosphoric acid, 4 per cent ammonia, and 4 per cent potash. It was thought advisable on sandy loam soils containing considerable organic matter to reduce the ammonia about 1 per cent; and for very sandy soils to increase the potash 2 or 3 per cent.

In certain sections tobacco is sometimes affected with "sand-drown", a condition which is evidenced by yellowing of the leaves. In sections where "sand-drown" is

(*Turn to page* 48)



Increasing the fertilizer application from 700 *to* 1400 *pounds increased returns* $95 *an acre*

Nebraska's Corn Contest

By

Y. P. Bhosale

E. C. NOYES, Valley, Nebraska, won the state championship by growing 101 bushels of corn per acre in the contest conducted by the Nebraska Crop Growers Association. Mr. Noyes was the high man in the Central division, and W. R. Nicholson of Beaver City and Gerald Wilcox of McCook were the high men in the Western and Eastern divisions respectively.

The state is divided into three sections, the eastern, central and western, for the purpose of this contest. Each person entering the contest is required to enter one piece of 10 acres of ground and the winners are judged from the yields. Out of the 153 who entered the contest, only 87 completed it.

Mr. Noyes did not cultivate his piece of ground any more, or give it any more attention, than he did the rest of the 95 acres of corn he grew.

The land on which Mr. Noyes grew this corn has been farmed for the last 40 years, and has been in alfalfa for about five years. He ploughed the ground, disked it, harrowed and then the corn was listed in rows 16 inches apart. He chose Reed's Yellow Dent variety and the seed was home-grown. He cultivated this plat of land four times with a single row sulky cultivator.

Mr. Noyes spent 69 hours in taking care of the ten acres, and this includes manuring, plowing, harrowing, disking, planting and other necessary operations. The number of horse hours required was 319. A horse hour is one horse working for an hour, or two horses working for 30 minutes each. Human labor was charged at 30 cents an hour, and horse labor at 20 cents an hour. Husking was charged at the rate of 10 cents a bushel. It cost him $185.58 for labor, in addition to $2 for seed, to grow the ten acres of corn.

A charge was also made for the use of the land, this being based on the rent. After deducting all the charges, a profit of $17.64 was left for Mr. Noyes.

This is the first time Mr. Noyes has entered the contest. He has saved some of this year's seed and may try to grow at least 110 bushels of corn next year where only 101 bushels grew this year.

W. R. Nicholson was the high man in the western section, with an average production of 89.4 bushels per acre. This is not the best crop he had, for in 1923 he raised an average of 107 bushels to the acre. Mr. Nicholson double discs his ground about the 15th of April, and then lists the corn 13 inches apart in its row any time between the 1st and 10th of May. He subsoils his corn about 3 inches deep. When the crop is about 6 inches high, and the stand is good, he cultivates it with a two-row machine and throws the row out. When the corn is about 18 inches high, he throws back the

dirt, which has been thrown away from the plants by previous cultivations. When the corn is ready to lay by, he cultivates it with a one-row cultivator.

He plowed under a crop of alfalfa to a depth of 9 inches in 1922, but the yields obtained were only fair. In 1923 he got the best yield, 107 bushels to the acre. This year his average production was three times the normal yield in that section of the state. He used 62.5 man hours and 226 horse hours, the total labor cost being $153.66, in addition to $2.50 for seed. His profit per acre was $20.14.

Gerald Wilcox was the high man in the Eastern section of the state with a production of 100 bushels to the acre. He irrigated his corn crop. His total labor cost was $138.30, in addition to the $3 which he paid for seed. He made a profit of $25.20 per acre. The normal yield in the eastern section of the state is 45 bushels. The growers expect to raise 99 bushels per acre this year.

When the corn is above the ground, Mr. Wilcox goes through with a sled machine which is drawn by four horses. He cultivates the crop with a single row, or four shovel cultivator, two times during the growing season.

He draws water out of a well on his farm for irrigating the crop. He is able to draw about 800 gallons of water per minute with the aid of his 10 horse power motor. He irrigates two times in July, and he thinks that it costs him fifty cents per acre for flooding, in each irrigation.

Left to right—W. R. Nicholson, E. C. Noyes, Gerald Wilcox

Tune in on This

By P. M. *Farmer*

Sam Pickard

ARRR-RR-RK! Ziz-zz-z-z! Wh-eee-ee-e-e! Station SAM broadcasting: "Hello farmers of the U. S. A. and Canada! Uncle Sam announces that one of his nephews of the same name has begun providing regular and interesting programs on agriculture from Washington to be broadcast from important stations in all parts of the country. This chief of the new Radio Service, in the office of Information, Department of Agriculture, is Sam Pickard, the same who developed the 'college of the air' at the Kansas State Agricultural College. He has been at Washington since the first of the year gradually getting programs arranged and fixing up contracts with broadcasting stations.

"The first of a series of programs which will be developed by the Radio Service was started by Mr. Pickard February 1 and will be available twice a week under the title 'Farm News Digest.' It consists of short items of agricultural news selected from current publications, most of them not accessible to the average farm reader.

"ON February 15, a daily service called 'Fifty Farm Flashes' was put on by twenty broadcasting stations. It is made up of 50 questions asked by farmers and answered in a few pithy sentences by specialists in the various bureaus of the department. This service is prepared so as to fill the needs of farm people in the various regions and different phases of farming will be treated on certain days. For instance, on Monday the questions

(*Turn to page 56*)

Making the base map

Surveying

¶ *Uncle Sam looks around his farm*

THE soil survey of the United States has become one of the most valuable pieces of work undertaken cooperatively by Federal and State agencies. This project, begun in 1889 by the United States Department of Agriculture has reached the point where more than one-third the soil area of Continental United States has been analyzed and mapped in detailed and general surveys. At the present rate of progress the entire country will be covered by 1950.

Dire things were said in the early days of the soil survey regarding the soil of this country—that before long it would lose its power to produce crops and that then fertile fields would become barren wastes. Research and analysis of thousands of samples of soils collected by the Bureau of Soils show, on the contrary, that the soil cannot be exhausted, although it may become fatigued and impaired by improper use.

Soil is a living thing; it breathes; it has a circulatory system, and digestive apparatus. To prevent this living thing from becoming sick, say the Government soil experts, it must be properly fed and exercised. Its diet consists of the remains of animals and plants; a change in diet through crop rotation. It needs stimulants in the form of commercial fertilizers. It must be exercised by plowing and cultivation.

Collecting the soil samples

the Nation's Soils

By
Frank George
United States Department of Agriculture

IT is now generally recognized that scientific identification and mapping of soils are needed to prescribe a proper course of treatment and to determine the best use to which they should be put. Cooperative agreements for soil surveys are therefore in effect in 30 states, surveys having been completed in the entire states of Maryland, New Jersey, Delaware, and Rhode Island, and almost completed in West Virginia, Alabama, and Mississippi. From 50 to 60 counties a year are surveyed in detail.

Many of these states have established test farms on the more important soils in their territory so as to be able to advise farmers on a certain soil on the basis of results of tests on that soil. Time was when it was considered sufficient to have a central experiment station in a state where experiments were made on only a few types of soil and to advise farmers in all parts of the state, located on widely different soil types, on the basis of these tests.

The Bureau of Soils has demonstrated, however, that soils may be texturally the same, they may occur in the same territory under similar climatic influences, be similarly well drained, and yet produce crops of different quality. A case in point is in connection with the production of bright tobacco used for pipe tobacco and ciga-

rettes. Such tobacco produced on Durham fine sandy loam has been found to be superior to that from Norfolk fine sandy loam, although the two types of soil are almost identical.

A SIMILAR example illustrating ing the practical value of recognizing the finer distinction in soils is with regard to the production of Greening apples in New York state. It was found that certain soils in the same district produce a green Rhode Island Greening whereas certain other soils produce a yellow Rhode Island Greening. Orchardists were not making this distinction in setting out trees, although the two kinds of Greening are favored in different markets. The tests showed further that the best soils for the Greening are not the best soils for the Baldwin and some other varieties—information of value to orchardists in determining planting varieties.

Soils were formerly classified merely as sandy soils, loams, or clays, and what constituted one or another class was merely a matter of individual opinion. They are now classified on the basis of texture into 12 distinct classes, scientifically determined, and uniformly applied to soils throughout the country, so that a fine sand in Maine is the same as a fine sand in Oregon, and a silt loam is a silt loam, and a clay a clay, no matter in what part of the country it may occur.

The Tropical Plant Foundation made a cooperative agreement with the Bureau of Soils during the past year to study the soils of Cuba in connection with establishing test farms for sugar cane experiments. Heretofore the lands of the island have been known as red, mulatto, black, savana, and coco soils, all of which terms are too broad to define any specific type. Nearly 50 distinct types of soils were classified in the survey, on the basis of which large areas of land which had become low producers are being brought back to greater productivity. Most planters now appreciate the need of soil studies so as to adjust fertilizer practices, soil management, and crop varieties.

SIMILAR work is being done in Haiti, and Scotland last year engaged the services of a prominent member of the Bureau of Soils to organize a soil survey in that country. In pursuance of a sound reclamation policy, Secretary Work of the Department of Interior has ordered that no additional engineering work shall be done on reclamation projects until the soils have been carefully studied and their suitability for farming passed upon by soil men of broad experience.

Counties in which soil surveys are to be made are selected by joint agreement between the Bureau of Soils and either the State Geological Survey or State Extension Officials. The soil maps are plotted and colored in the field, each map covering an entire county. Base maps are used showing salient natural features of the area, upon which are outlined and colored the various areas of the different types of soils.

THE surveying party usually consists of two men who visit every part of the area, trace and locate the soil boundaries, and take samples of the soil and subsoil to the depth of the parent material. The work is later reviewed by inspectors.

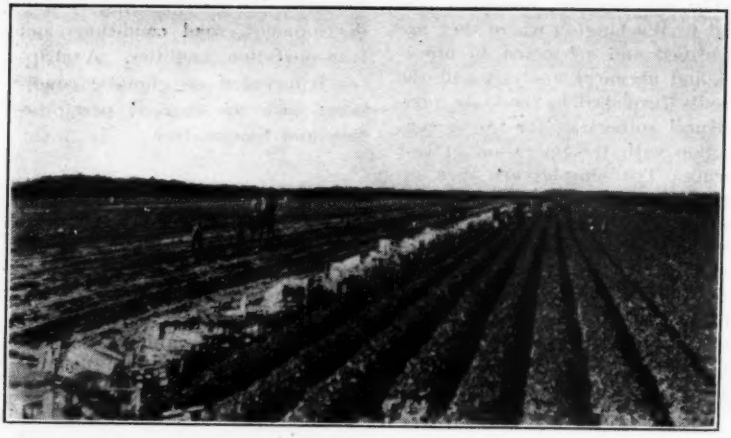
The soil samples, meantime, are sent to Washington where they are identified and subjected to physical and chemical analysis and the results furnished to the state agricultural authorities for use in connection with the operation of test farms. The samples are then indexed and filed for future reference and comparison. There has been added to this collection recently more than 250 samples of soil collected by Dr. Curtis F. Marbut, chief of the Bureau of Soils, from 100 different localities in leading European agricultural areas.

SOIL surveys have been practically completed in 1,147 counties, detailed reports having been published on 1,015 counties. The report for each county includes a colored soil map on which the various types of soil are identified. The text of the report gives a detailed topographical description of the area, the county's history and development, road conditions and transportation facilities. A chapter is included on climatic conditions such as seasonal precipitation and temperature.

ANOTHER chapter gives the agricultural history of the county and statistics on the various agricultural enterprises, including crop yields and land values. Each of the soil types are described in great detail so that the prospective purchaser of a farm may know precisely the kind of crops which may be grown in any given section. The reports are sold at 15 to 20 cents each by the Government Printing Office to pay the cost of printing.

Mimeographed lists by states of the counties for which reports have been prepared may be obtained upon request to the Bureau of Soils, Washington, D. C.

Soils are analyzed to determine the relative proportion of the different sized soil grains of which they are composed. The separations are made by means of sedimentation, centrifuging, and sieving, controlled by microscopic examinations



Celery a mile long

The Montezuma Marsh

By G. H. Brainard

County Agent, Wayne County, Sodus, N. Y.

TO the geologist, the Montezuma Marsh might spell an evidence of ancient glacial action, but, to the grower of muck crops, it forces forth the fact that it is a vast and fertile area, capable of producing a large acreage of vegetables.

The Montezuma Marsh, in its entirety, comprises some 20,000 acres of land in corners of Cayuga, Seneca and Wayne counties in New York State. The portion with which this article deals, lies between Savannah on the west and Port Byron on the east. This area can be observed from the state highway which bisects it.

This muck is now being cropped for the third consecutive year. From a wilderness of waving rush or flag, as it is called, it has responded to the touch of some mystic magic, and this world of reed has disappeared, to be replaced by vast distances of celery, onions, lettuce, carrots and other crops.

The development of this section was brought about by the standardization of the New York State Barge Canal, which skirts the eastern boundary of the swamp. This

standardization called for an increased depth and width of the canal, which made possible the drainage of the adjacent marsh. There was no deliberate attempt to drain this; it was an incident in the state's program for a better system of inland waterways.

To make the situation a more desirable one, again the program of state road building entered into the development of the land, and a ribbon of concrete was built across the marsh, which allows the easy movement of supplies and crops by motor trucks to shipping points.

A few men with a vision, backed by confidence and courage secured locations on this swamp from the original holder, The Solvay Process Company. A man by the name of Perkins was first interested and from him another gentleman by the name of Snyder secured a portion of the land. J. H. Snyder was a grower of considerable experience in producing crops on muck for he had been operating on rather an extensive scale near Sodus, New York.

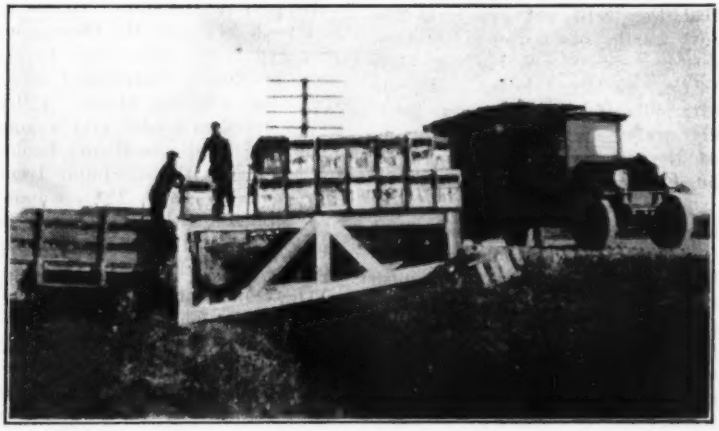
These men proceeded to ditch their holdings and subdue the vegetation. They tell of the time when one tractor man could not see a like equipment 18 feet in front of him, so dense was the flag that they were plowing under.

At the present time, the majority of the land cropped is on the north side of the highway. The muck at this point is about a mile wide. The ditches are extensive and the slope ample enough so that they clean themselves.

From a piece of timberland on the extreme western edge of the marsh, to the Barge Canal, a mile away, the fall is 13 feet. The amount of water standing in the ditches at any time during the year is negligible, while at the terminal of the main ditches one can observe large piles of silt that have been carried down by the water, seeking an outlet.

One grower has under cultivation 400 acres, this being one of the largest enterprises in this section. Of this 400 acres, 110 are in celery, 60 in carrots, 130 in lettuce and 60 in onions. Also smaller acreages of spinach, Chinese cabbage, beets, and other crops.

The first step in cultivating this



To market via trucks

virgin soil, after plowing under the primeval vegetation, was to plant corn and potatoes. The tilling of these crops aided materially in fitting the soil for the future.

The following table of fertilizers shows how great is the amount of plant food needed per acre for the economical production of the various crops:

Celery, 1 ton.....4-8-7
Onions, 1 ton.....4-8-12
Lettuce, ½ to ¾ ton....4-8-7
Carrots, ¾ ton.....4-8-12
Sweet corn, ½ ton.....5-10-5
Potatoes, 1200 lbs.....2-8-10

Snyder's operations, alone, are so large that he is an individual buyer of 300 tons of commercial fertilizer. This, in itself, is a small train load, without considering what the other growers use.

As one drives across this concrete highway, over which the supplies attendant to crop production are brought in, and the resultant harvest moved to market, a glance to the north reveals rows of celery so long that they seem to meet in the distance.

One sees a multitude of people busily engaged in caring for the crops. Motor cultivators, tractors with extension on wheels so that they will not sink into the soft earth, one-horse cultivators, dusters, spray rigs, loading platforms, packing sheds, and pile after pile of lettuce boxes and celery crates awaiting the maturing of the crop, give evidence of a huge enterprise.

The labor comes from the neighboring villages and towns. Port Byron, Savannah, Montezuma, Auburn, Clyde, and Lyons furnish the bulk of the workers. Many of them are women, especially during the harvest season. The clothing worn is, to a very large extent, overalls made of waterproof material.

Snyder, being the largest grower, regularly employs, during the season, about 60 persons. This number is augmented during harvest until 100 people are on his payroll. At harvest time the work is done by the piece.

Every precaution is taken to insure a successful crop. During a critical blight period, three spray rigs were going constantly for a duration of 10 days with no intermission except to load up. At another time when an early freeze was imminent, it was "all hands on deck" to bank the celery.

When darkness naturally would put a stop to operations, autos were placed along the highway so that the head-lights would play on the section to be banked, and the work continued far into the night until it was completed and the danger from freezing was eliminated.

When the celery is harvested, a block of the celery is laid out and a horse knife cuts each row. This horseknife shears off the roots just below the surface of the ground. Strippers then follow through and rip off the stalks that have been bruised or are otherwise damaged, and which would not allow a quality pack to be put up.

Helpers follow in their wake and pack in crates the bunches of prepared celery, the crates having been previously distributed along the edge of the block. Filled crates are then loaded into wagons with wide tired wheels and hauled by tractors with caterpillar tread or extra wide rims. These wagons are hauled to the edge of the muck where the concrete road borders the area.

There are nine loading platforms distributed along the edge of the muck. The loading stations are substantially built, the roadbed being made of crushed stone and the platforms of heavy planking.

(*Turn to page* 54)

Why Farm Electrification Drags

By Arthur P. Chew

United States Department of Agriculture

EDITOR'S NOTE:—*Last month Mr. Chew told some of the reasons why more rural communities are not enjoying the convenience of electricity. In this continuance of his article he sees possible means of making it practical for more farms.*

SINCE the only solution is to increase the quantity of current consumed by the average customer, interest centers in what can be done along this line. Electric power, of course, is already widely used for light stationary work, particularly in the farm home. But the utmost conceivable expansion in the home use of electricity, according to the experts, will not call for enough current to justify large extensions of rural electrical facilities at rates that will be at once reasonable to the farmer and remunerative to the utility companies. It is necessary therefore to explore the field for the application of electricity in farm operations.

A "bright" farm family circle

Heavy expenditure for larger motors and increased capacity in transmission lines and transformers would be necessary to extend the use of electric power in heavy stationary work generally. Yet experts believe the operation would pay, especially if ways could be found for avoiding the concentration of peak loads within a short time.

When such concentration takes place, a high capacity plant which

(*Turn to page* 51)

An S. O. S. for Corn

By A. A. Burger

Ex-County Agent, Iowa

MORE than once have the county agents saved the day for the farmer. In cooperation with the colleges and extension departments, they can do it again this year if they can succeed in locating plenty of good seed corn and can then get the farmers busy to test it. This is the immediately important job before them in the corn belt states. We are far short of a sufficient supply of good seed corn for our needs.

Here, corn is our principal crop. Why should not every farmer know that the seed for the principal source of his income is insured, so far, at least, as it is in his power to provide plenty of it and to know that it is safe. As if there were not already enough hazards in the business of growing corn, there will be plenty of farmers who will gamble that their corn will grow. The county agent can do much to change this attitude of mind.

38 good ears, 797 poor ones—a disappointing inventory

Poor seed corn is the greatest single factor, outside of the soil, in holding down the yield. Fifteen average size ears will plant an acre; a bushel will plant seven acres. One weak, or dead, or moldy ear may reduce the yield from five to ten bushels per acre. How can we prevent it? It will cost a cent to a cent and a half to test each ear—15 to 25 cents to test enough for an acre. Why guess when testing is so cheap? —the cheapest kind of insurance. Corn at $10 per bushel will cost about $1.35 for seed per acre; oats at 50 cents, $1.50, yet it is not a money crop.

IF I were a county agent I should ask each farmer these questions: Do you have plenty of good seed for your own farm? If not, where are you going to get it? Will what you have grow? Have you carefully given each ear the 6-kernel germination test? If not, you may have another guess coming. My dear sir, listen to this report from Grundy county, Iowa. (It is typical of many counties of Iowa and many other counties of the corn belt.) These tests were reported by rural schools, Dike and Grundy Center high schools cooperating with the local farm bureau. Corn picked before frost: 6,500 ears tested 78 per cent strong, 9 per cent weak, and 13 per cent dead. This is the best seed corn.

Eighty-three hundred ears saved after frost tested 43 per cent strong, 7 per cent weak, and 50 per cent dead. This is seed corn.

Twenty-five hundred bushels of crib corn tested 23 per cent strong, 7 per cent weak, and 70 per cent dead. This test included many cribs. The corn in these cribs is getting poorer every day.

The worst feature about the whole seed corn situation is that too many farmers do not realize it, or else they refuse to believe it. Here is the chance for the county agent. Later these men may be in trouble; some of them were in 1915 and in 1918; then some of them woke up too late. Some replanted, some had a crop failure. What a wonderful opportunity has presented itself here in the corn belt for a splendid piece of cooperative work on the part of the agricultural forces.

Reading the test is easy and accurate with this tester

Representative C. A. Hollis, Cedar Falls, chairman of the agricultural committee of the Iowa House of Representatives, has made the suggestion that a seed corn testing station should be established and operated by the county agent for the farm bureau in every county of the state. The suggestion may apply to other states. I think that with the proper cooperation the county agent could prevail upon the local banks in every community to write a letter to the farm patrons calling attention to the seriousness of the situation and the need for immediate action.

Local meetings conducted through the cooperation of the county agent with the extension departments can accomplish much more than the independent effort of each county alone. If there was ever a time for holding local corn shows, this is the year when they should be held. Everybody should cooperate to make it a success.

At the recent corn show at Shellrock, Iowa, the people woke up, as if by a thunder bolt, and they got busy at once. They found they had no seed corn. The same thing has happened at many other shows. It is surprising how much more folks are interested when they find out that their best sample out of their best seed corn is poor,—perhaps too poor to plant. Various organizations may furnish corn testers, either free or at a nominal cost,—a very commendable practice. The local farm bureaus could be of assistance here. The responsibility finally rests with the farmer, but the county agent can do much to get him to act.

Three of the fundamental suggestions in the seed corn commandments of Professor P. G. Holden, the father of better seed corn in the corn belt, were these: Get your seed corn near home,—plenty of it—then test every ear. He was strong in his condemnation of buying shelled corn.

In a series of 26 experiments which he conducted during six years in 26 counties of Iowa, he found that the average yield on 2,715 local farmers' samples was 54 bushels per acre; the yield on 387 imported farmers' samples was 53 bushels, while the yield on 281 seed house samples was 46 bushels,—eight bushels less than the corn secured in the same neighborhood. And he found by making a germination test on this corn and selecting 10 per cent of the highest germinating samples, that the yield was increased by 11 bushels, or 20 per cent.

In some recent tests conducted along the line of the Illinois Central railway through Iowa, Professor H. D. Hughes, Ames, found that corn could not be moved far east or west in the same latitude without reducing the yield. He concluded that home grown seed was best, that it yielded better and was safer. Every experiment that has ever been conducted furnishes proof that a careful ear germination test increases the yield. Much can be done in the way of locating the better seed at home.

OUR experience in operating a testing station during the bad seed corn years of 1915 and 1918 and testing several thousand bushels of corn for the farmers has convinced us that it was one of the most important and convincing arguments that we could use. They learned of the seed corn situation, and they saw with their own eyes. Thousands visited the station.

We bought cribs of corn, selected it at the crib, brought it in

(*Turn to page 55*)

FERTILIZERS *for* COTTON

By D. J. Burleson

Extension Agronomist, University of Arkansas

THE original home of the cotton plant is in a tropical climate. In its native home the plant lives for several years, and grows to be quite a tree. Under those conditions, however, the plant produces very little fruit, because it keeps on growing a long time, and goes mainly to stalk.

Our climate is not so well adapted to producing a big stalk, but is better adapted to making a quick growth of fruit. That is why we have the best climate in the world for cotton, but climate alone will not make cotton. Since cotton, as we grow it, must produce a crop in a much shorter time than it does in its native home, there must be a good supply of available plant food, in the soil. This is one reason why cotton gives a better response to fertilizer than any other of our common field crops.

In order that we may get the full benefit of our unsurpassed cotton climate, we should fertilize our cotton in such a way as to have our climate and fertilizer work together in producing a big proportion of fruit to plant. To do this, the fertilizer must produce a quick growth, then a stimulation of fruiting, which will check the plant growth and cause the plant food to go to the production of fruit.

For nearly all the soils of Arkansas a cotton fertilizer should contain all three of the common fertilizer elements, which are phosphoric acid, nitrogen, and potash.

Phosphoric acid stimulates early growth and fruiting, and hastens maturity of the plant. It has a tendency to check the growth of the plant when it reaches the fruiting stage.

Nitrogen stimulates the growth of the plant. A large amount of available nitrogen makes the plant grow fast and gives it a dark green color. The cotton plant needs a good supply of soluble nitrogen early in its growth, so as to hasten plant growth.

Potash aids the healthy condition of the plant. It helps the plant to resist diseases such as rust and wilt. Since the advent of the boll weevil the proportion of plant foods are important to make sure the cotton ripens at the right time.

(*Turn to page 38*)

The County Agent *and* Rat Control

By *James Silver*

Biological Survey, United States Department of Agriculture

HOUSE or barn rats have penetrated into every state of the Union except Montana, and because of their destructiveness have made rat control a popular project with county agents throughout the country during recent years. Control measures have usually taken the form of short, intensive drives, not over one week in duration and are commonly referred to as anti-rat campaigns. Four principal reasons for the popularity of anti-rat campaigns among county agents are outstanding:

1. Rats are an economic burden and a menace to the health of a large percentage of the human inhabitants both of country districts and of towns and cities, and cam-

Rats destroy by contamination 10 *times what they eat*

Poultry losses alone warrant an anti-rat campaign

paigns against them, therefore, present an opportunity for rendering a greatly and widely needed public service.

2. Rat campaigns conducted with the aid of a federal specialist, who has systematized methods, procedure, and publicity materials, may be conducted with maximum effectiveness in proportion to the efforts expended.

3. The results of a rat campaign are immediate, apparent, worthwhile and therefore are usually appreciated and give impetus to the county agent's work in his territory.

4. News created by a rat campaign is much sought after by editors and provides a channel for legitimate publicity for the activities of the county agent. It also attracts the helpful cooperation of individuals and organizations with whom the county agent seldom comes in contact.

A recent contributor to BETTER CROPS* made the pointed remark that in educational work lies the greatest field of usefulness of the county agent system and perhaps also its greatest weakness for all too often the efforts of the county agent are not appreciated by the people. The success of anti-rat campaigns is due to the fact that it combines educational effort with immediate action. The active phase of a campaign is merely the means to the end and is designed to attract attention, stimulate popular interest, and enlist the support of the press through which the more important and far-reaching educational material can be presented.

THE popular conception of successful rat control is the wholesale destruction of rats by simple and effective methods. In reality, however, the killing off of rats does no more to control these pests than does the swatting of flies control flies. As it is necessary not only to provide screens to shut the flies from buildings but also to remove

* *Burger, A. A., "Education—The County Agent's Life Saver,"* BETTER CROPS, *Volume V, No. 5, p. 51. January, 1926.*

garbage and filth to prevent their multiplication, so is it necessary to real rat control to build out the rat wherever possible and to eliminate its food and breeding places. The farmer and householder must be taught to know what there is about his premises that is responsible for the occurrence and maintenance of rats, and be urged to remove them.

Fly-swatting is necessary to eliminate those flies that will get into a house in spite of all precautions that can be taken; and it is likewise necessary to teach methods of rat destruction that will be applicable under all conditions likely to be encountered, for an occasional rat will gain entrance into the most rat-proof of structures. It is also necessary to recognize that on many premises the conditions are such that the removal of foods and places attractive to rats is not practicable.

POISONING is undoubtedly the most practical method of destroying rats in most cases, but where rat burrows may be found in the open ground or where a concentration of gas may be obtained under floors, fumigation with calcium cyanide dust is more efficient. There are also conditions where the use of poisons is inadvisable and where traps are preferable or where use should be made of a certain kind of poison which will not endanger livestock. These methods furnish the basis of valuable and interesting demonstrations which should be conducted in anti-rat campaigns.

The extent of the anti-rat campaign may be arranged to meet the conditions as the county agent sees them. It may be carried on in the country districts only or it may be made county-wide. It may consist of a simple series of well-advertised demonstrations, or of demonstrations supported by limited preliminary publicity. On the other hand, there may be an intensive publicity campaign involving the free distribution of poisoned bait, the awarding of prizes for rat tails, lectures in the public schools, the extensive distribution of posters, handbills, circular letters, and stickers, the showing of lantern slides, window exhibits, motion-picture films, street banners, and other forms of publicity on the depredations and control of rats.

This type of campaign involves the raising of funds and is usually conducted under the cooperative effort of the county agent and the more active organization of the county, particularly the farm bureau, the chamber of commerce, the civic or businessmen's clubs, and women's clubs.

THE basis of the intensive publicity campaign has been the free distribution of barium carbonate rat poison, usually through drug stores in towns and through general stores throughout the county. Barium carbonate is purchased in bulk at very low cost and is put up in small envelopes, with directions printed upon them, often by the boy scouts. Giving away the poisoned bait enlists the interest of the newspapers, and the publicity is given a good start.

This type of campaign should have the backing of interested and influential citizens. A meeting should be called at the start at which a plan of action should be adopted by them, and officers and committeemen selected. Separate committees are usually needed to obtain funds and supplies, to arrange for all publicity, to attend to the distribution of poisoned bait, posters, handbills, etc., and to obtain and award prizes.

A more restricted type of campaign can be handled by the county agent without assistance other than

(*Turn to page 50*)

Looking Ahead

By A. B. Genung,

Economist, United States Department of Agriculture

¶ *This authority tells us what to expect in* 1926

ANYONE can be a prophet. The almanac proves that. And whatever one prophesies, there is a definite mathematical chance that he will be right. Also, ditto that he will be wrong.

As a usual thing, the more a man really knows about a given situation, the less likely he is to set himself up as a seer. That is one reason why most forecasts may be taken with a liberal grain of salt. This is no exception.

One lesson, however, is gradually sinking home to farmers. This is that it is not the price of the crop when it goes into the ground but the price when it comes out of the ground that counts. The current price of cows may influence a man to expand the breeding program. But it is the price of cows three years later, when the new heifer has come into milk, that tells whether he used good judgment. Paying 10 cents for a nice red apple on the fruit stand may make me think seriously about planting some apple trees. But if I plant them, it is the price of apples 15 years hence that will let me know how big a fool I am —or otherwise. Good farmers are always looking ahead.

It does not follow, however, that the good farmer is continually switching from one thing to another. Careful analysis of the business of successful farmers all over the country, covering a period of a dozen years, proves quite the opposite. The men who make the most money over a period of years are those who adhere to a fairly stable plan of operations. They vary the acreages of cash crops and the output of animal enterprises in line with changing conditions but they keep to some central scheme of organization and management. The successful farmer is a successful forecaster but on top of that he is a conservative.

HOW about the outlook at present? What seems to be the situation for the coming year in the principal lines of farming?

In general, considering agriculture as a whole, its position grows a little stronger all the while. The readjustments made in crop acreages and finally in livestock production have brought farmers up to within speaking distance, at

least, of other great productive groups. The index of purchasing power of farm products has moved upward about 5 points per year from the low 1921 average of 69 until last year it averaged 89 (the 5 years immediately preceding the war being considered as 100). While farm products as a whole still stand at a disparity in exchange for industrial goods and services, the trend has been steadily toward improvement of this exchange position.

AMONG the major lines of production, the outlook may be very briefly sketched as follows:

In the case of wheat the probabilities favor a rather larger production of hard wheat in this country than we had last year. The hard winter wheat States put in about 4 per cent larger acreage last fall than the previous fall. The seeding has gone through the winter in fairly good condition, for the most part. On the other hand, the production of soft winter wheat may not be any larger than the short crop of 1925 as the acreage in the principal soft winter wheat States was reduced about 6 per cent and the crop went into winter in poor condition.

If the spring wheat territory increases or maintains last year's acreage and the yield comes up to average it is probable that we shall have a surplus for export. In that event prices will have to follow the world level without much benefit of tariff. The present prospects for 1926, aside from the uncertain Russian situation, indicate that the crop outside the United States may not be as large as in 1925. But the expected foreign decrease may be largely offset by an increase in our crop. In general, however, it will probably be good business for spring wheat growers to plan about as usual.

The corn situation has been the subject of more or less agitation. Portions of the Corn Belt had a very heavy crop last year and some cash corn growers were forced to sell their grain at around 50 cents and in some cases less. Viewed in the large, however, we have had only about an average supply of corn during the last year.

The real point is that fewer head of livestock have reduced the feeding requirements. Corn is, after all, almost entirely a feed grain. For the coming season there seems little to say other than that corn growers should follow just about their normal planting program. The weather is the determining factor in the corn crop and that can not be foreseen. Taking agriculture as a whole it is usually a great advantage to have abundant feed stuffs. An average corn crop ought to be good business this year.

OBSERVERS of the cotton situation are inclined to be bearish as to this next year's outlook. They point out that for two seasons the rate of world cotton production has exceeded the rate of world consumption with a consequent increase in stocks. Should last year's acreage in this country be repeated this season and the yield per acre average that of recent years the crop would approach 14 million bales. This, together with the carryover, might lead to a substantially lower level of prices on cotton.

However, as in the case of other cash crops, this involves a question of alternatives. If the man in the Cotton Belt is to reduce his acreage of cotton, what shall be substituted on the same land?

(*Turn to page* 53)

Budding *and* Grafting Apple Trees

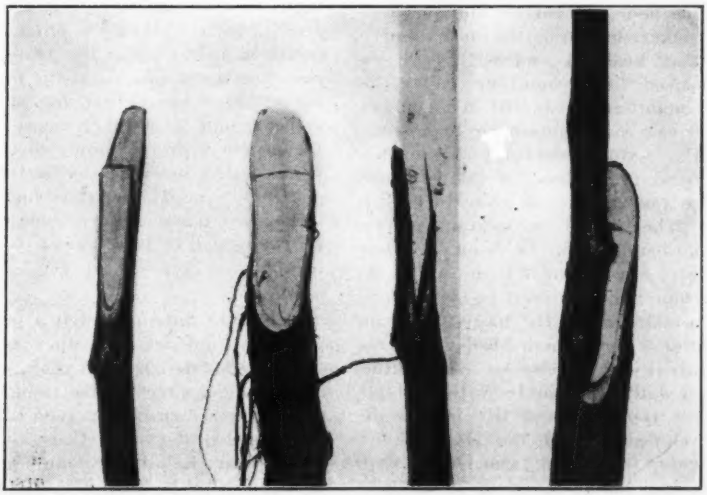
By T. J. Talbert

Prof. of Horticulture, University of Missouri

THE propagation of fruit trees by grafting and budding has been practiced for many centuries. Pliny, the historian, believed the art of grafting was taught to man by nature. Many fanciful and superstitious allusions to grafting may be found in Volume 3 of Pliny's Natural History. Those who practiced the art generally endeavored to shroud it in mystery.

The fruit grower was often led to believe that one had to be endowed with special faculties to be able to propagate fruits successfully by budding and grafting. A touch of magic appeared necessary to grow buds of the pear upon the apple or buds of the peach upon the plum. The propagation of fruit trees by graftage is now, however, well understood by many

(*Turn to page* 59)



A—Long sloping cut and slit made in scion
B—Stock prepared in a similar manner
C—Scion and stock pushed together—tongues interlocking
D—Scion placed to one side to secure cambial contact

PARTNERS *in* HONOR

By V. T. Bartle,
University of Wisconsin

A NEW precedent had to be set when Wesson J. Dougan of Beloit, Wisconsin and his wife, Eunice T. Dougan were given honorary recognition by the University of Wisconsin during Wisconsin Farmers' Week. It was the first time since 1909, the beginning of the practice of awarding honors to men of the field and furrow and to homemakers in and of the open country, that husband and wife have received the recognition. When the committee considered Mr. Dougan, it was found impossible to separate the accomplishments of the husband from those of the wife and so the award was given to both.

The official recognition of the husband read, "Wesson J. Dougan, a native of Wisconsin, has become widely known in his work as a dairyman. He has striven for and achieved high ideals in an unusual degree. By the combination of skillful husbandry with the highest type of rural life he has developed one of the state's finest dairy farms and farm homes. Ever using the most scientific methods that he could command, he has built up and maintained the soil fertility of his farm, equipped it in a modern manner, and produced a product of the highest quality."

And the citation of his mate contained this summary: "Eunice T. Dougan spent her early years on a farm in Calumet county, Wisconsin. After her college course and teaching experience in Wisconsin schools she returned, 20 years ago, to farm life at her present farm home near Beloit, where she has built an outstandingly useful career. She has taken an active interest in better rural life through elevating the standards of the farm home. Her belief that the rural home should be a place where all the members of the family love to be, and that nowhere else is there a greater need for constructive leadership, has made her home one that may well be held up as a rural ideal."

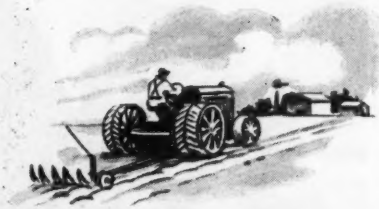
THESE statements tell a great deal, but not near all the story. They do not tell how 20 years ago Mr. Dougan gave up the ministry to become a farmer, how soon after they settled down on their small farm near Beloit Mr. and Mrs. Dougan drove to town with a horse and buggy and sold their first six quarts of milk, the beginning of their present business, as the "Babies' Milkman." Although Mr.

(*Turn to page* 44)

Better Crops' ART GALLERY of the month

Mr. and Mrs. Wesson J. Dougan—the first husband and wife to receive honorary recognition from the University of Wisconsin for outstanding work in agriculture

Secretary Jardine conferring with representatives of American Agricultural Editors' Association on the agricultural situation



James J. Jeffries, the boilermaker who became heavyweight champion of the world, is now and has been for some years living as a farmer on his ranch near Burbank, California

Forty years on forty acres without horse, mule or ox—this Florida farmer uses his wife and daughters at the plow. All work on the farm is done by hand

Mrs. C. B. Allen, famous artist, Department of Interior, Washington, whose paintings have helped materially in planning for the improvement of waste lands

Farming in

Switzerland, where the cows fall out of the pasture if the fences are not kept well repaired

A home-made wheelbarrow in Switzerland where every effort is made to save litter for rebuilding soil fertility

Dress, manners and customs in Irak, Persia, date back to biblical days. This aged native harvests crops with the same crude implements used by his forefathers

n other Lands—

Milk from contented burros can be had from this portable dairy in Buenos Aires. (Photo by Ewing Galloway, N. Y.)

His Royal Highness Madhavsinhui, enroute to California, where he is to study American agricultural methods

Sowing grain by hand—a method of by-gone days in the greater agricultural areas—which is still practised in primitive places. (Photo by Ewing Galloway, N. Y.)

Indiana farmers examining farm and home labor saving equipment that may be run by a small portable one-fourth horse power motor

Dairymen near Belvidere, Illinois, find economic advertising in filling old milk cans with concrete and using them for mail box bases

Crowned Corn King of Indiana—left to right, L. M. Vogler, who won grand championship at International, John Barnes, Jr., who grew 144 bu. per A., and Victor C. Lux, junior champion at the International

The Editors Talk

COTTON— 1926 The note of alarm sounded by the officials of the United States Department of Agriculture, and others interested in the economic welfare of the south, over the fear of over-production of cotton this year is well founded. It is based largely on the tendency of increased acreage throughout the cotton section, in the first place, and in the second place because of the well-nigh universal control of the boll weevil last year by weather conditions due to the excessive heat prevailing during July and August, eliminating to a very large degree this pest in much of the cotton area.

In addition to these two factors, we should not underestimate the value of rains which have just recently fallen over much of the cotton area of Texas, the value of which in terms of cotton production would have amounted to an estimated yield of at least 2,000,000 additional bales to the 1925 crop, if these rains had fallen by this date last season.

But the greatest menace to the cotton grower, and to business generally throughout the cotton section, is coming from the possibility of over-production due to the prospective acreage for 1926. The tendency to increase the acreage has grown markedly since 1920, both east and west of the Mississippi river, the greatest increase, however, coming from the western territory, in which territory the acreage has increased almost 75 per cent since 1920. In the eastern territory, comprising all the states east of the river, the acreage has increased only 22 per cent.

While the tendency to increase cotton acreage has been manifested in all the states west of the river, the increase has been most marked in Texas, where the acreage has gone up approximately 8,000,000 acres during the past three years. Just what the acreage will be in 1926 no one can foretell, but it seems now as if there will be as much land planted to cotton east of the river this year as was planted in 1925, and there is no reason why as much, and possibly more, will not be planted west of the river this year as was planted last season. Should we plant as much in the belt as was planted last year, and if reasonably good seasons prevail throughout the territory, and we should get a fair yield from these 46,000,000 acres, the possibility is that the

price will be much less, and the south would be in much poorer condition financially than at the present time.

Certainly, if cotton, our main cash crop, should have a slump in price, and we should continue to have to buy necessities, such as foods, feeds, and other commodities on the basis of present levels, then the cotton belt would be in a very serious condition financially speaking.

It is the fear that this may come to pass that has prompted far-seeing men in various positions to make statements regarding the inadvisability of planting too much cotton, and of the campaign to reduce the acreage in this crop for 1926.

The table below shows the cotton acreage, by sections, from 1921 to 1925, inclusive, both east and west of the river, along with the per cent of the total crop in each of the territories, as well as the per cent of total crop in Texas alone; all of which data will be of interest to those who wish to study this question of cotton acreage, and the tendency to plant more land to cotton in the part of the belt where this tendency is most marked:

COTTON ACREAGE, 1921-1925.

	East of Mississippi River:	Per cent of total:	West of Mississippi River:	Per cent of total:	Texas Per cent of total:
1921	13,742,000	45.3	16,604,000	54.7	35.4
1922	13,898,000	42.3	18,926,000	57.7	36.2
1923	14,707,000	40.0	22,133,000	60.0	38.4
1924	14,669,000	35.9	26,239,000	64.1	42.0
1925	16,784,000	37.0	28,683,000	63.0	*38.2

** Large acreage abandoned.*

THE VOCATIONAL IDEA

With the passage of the Smith-Hughes Act, in 1917, a new era in agricultural education dawned. Hundreds of agricultural schools with modern equipment and laboratories were built. Today, as a result of the rapid increase in our population and enormous growth of cities and their industries, with their consequent greater dependence upon the farmer than ever, the number of colleges and schools teaching agriculture has increased to something over four thousand.

Every effort to teach young boys and girls the fundamentals of agriculture and home building in the most practical manner is being made. This influence is being felt in industrial work and with this new training has come a greater prosperity and more satisfying life on the farm for all who believe that to be the owner of a small farm scientifically managed, is a greater privilege than the highest honor one can hope for in the business world.

The real secret of vocational training, whether it be in an agricultural or industrial school is that the boy or girl is taught in terms of action. His interest in his work is maintained. He is taught in terms of practical everyday things. His judgment, will and natural senses rapidly develop into right thinking, planning and working. In short, he works out real problems in worth while things, and is steered clear of work dealing with artificial situations.

The acid test after all is not the attendance in any school, nor the honor students, but the number who go out prepared to render real service. The Vocational Agricultural School is truly a factory for making farmers—super-farmers—men who can till the soil intelligently and get maximum results from their efforts. This is the type of farmer that takes agriculture out of the doldrums—out of the luck column, elevating it to its proper place among the several activities of everyday life.

Comparing the prosperity of the farmer today with twenty years ago, it is evident there has been a tremendous improvement. Periods of depression have visited the farmer, but in spite of these bad years occasionally, conditions today are infinitely better than a decade ago.

Many of the possible reasons for improved conditions obviously can be traced to the splendid work of the United States Department of Agriculture, the Colleges of Agriculture, the Agricultural Experiment Stations, the farm press, and the Agricultural Service Bureaus maintained by many industries. There is little doubt but that this prosperity is due to adoption of better farming methods, and authorities frankly state that in this improved state of affairs among farmers, the Vocational Agricultural School has played a very important part.

The statement that "Any Civilization that will endure must be based on a prosperous and permanent Agriculture," is a significant one. The Vocational Agricultural School is a potent influence in accomplishing just this, because it starts with the embryo farmer—the real foundation for the important national structure—A Permanent Agriculture.

HEROES This is a tribute to the Unknown Heroes who die; to the Unnamed Multitude who by toil and sweat of their brows carry the world onward, and erect the house of fame for the heralded heroes of their time; to the Unknown Soldiers of Life "unhonored and unsung" whose bodies form the steps to glory for generals behind the lines.

The heroes we have in mind as illustrating life's inequalities of praise are the men who died and those who actually took the risk of death in the rescue of the crew of the Steamer "Antinoe" —the men of the Steamer "President Roosevelt," who took their places in the boat, that others might be saved. Without regard to title, they are:

Adolph Albertz	Morris Jacobowitz
Juan Arenada	Robert Miller
Johannes Bauer	Herman Riedel
Wilson Beers	Frank Roberts
D. Caldwell	Thomas Sloane
Charles Diaz	Fritz Steger
Sam Fisher	Frank Upton
Cosmo Franelich	Alfred Wall
Alex Fugelsang	Otto Wilke
John Hahn	Uno Witanen

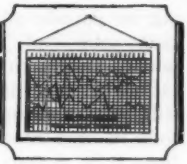
These are the real heroes of the rescue. Two of them, Steger and Witanen, made the Supreme Sacrifice. It is fitting that their loss should ennoble our recollection of this disaster of the sea and cause us to place them upon a throne above mere hero worship.

They and their comrades who took an equal chance typify the unrequited heroes of a hundred thousand years of time. They are the symbol of men who do the actual deeds of life, whose straining backs and tired arms till the soil, build our homes and clothe our bodies; who fight our wars and keep our peace; who live, and do, and die unknown while others reap the praise and gain.

But there shall come a time towards which we are hurling when the real doer of deeds shall come into his own; when the Tomb of the Unknown Soldier shall no longer hide the slaughtered and unnamed victim of life's inequalities; shall cease to be the charnel house at which we mourn the broken and discarded tool of man's ambition, but shall be the coronation hall where we may crown the Heroes who man the boats.

J. K. Howe

AGRICULTURAL DEVELOPMENTS



By P. M. Farmer

Area Plan Cuts TB

Ever since the area plan of eradicating tuberculosis was inaugurated it has increased in importance, and during the past few years the number of counties taking up the work has increased by leaps and bounds. Of the 98 counties having more than 15 per cent of tuberculosis infection of cattle the area plan is now being conducted in 34. Of the 165 counties where there is between 7 and 15 per cent of tuberculosis in cattle the area plan is now being carried on in 54 of them.

Two of the counties once very seriously affected have cut down the disease to ½ of one per cent and are now in the modified accredited area class. About 1/3 of the badly infected counties in the country are now carrying on a campaign. At the beginning of the year there were 149 counties in which the disease has been cut down to less than ½ of one per cent.

Cotton Needs Potash

According to work done at the South Carolina Experiment Station while potash may not have the same importance in relation to large cotton yields as do nitrogen and phosphoric acid, still potash is needed. The investigator found that where 800 pounds of complete fertilizer were used the best results were obtained when the mixture contained 4 per cent of potash. When no potash was used the yield of seed cotton was 692 pounds to the acre; 818 pounds when 2 per cent potash was used; and 848 pounds when 4 per cent was used.

These tests were carried on in the Coastal Plain Region. In the Piedmont Section tests showed that a little less potash was needed, 3 per cent being the most desirable when 600 pounds of complete fertilizer was used per acre. When the rate of application is lowered the percentage of potash must be increased, according to the test.

Dairy Cooperation in Minnesota

The Minnesota Cooperative Creameries Association, Inc., is one of the best demonstrations of the good results of cooperative work. This concern, which puts out Land O'Lakes butter, last year sold 80,000,000 pounds, total sales approximating $40,000,00. There are 450 member units with 73,000 dairy farmers as patrons.

Gypsum for Alfalfa

In experiments carried on in 10 Iowa counties the value of gypsum for alfalfa, red clover and oats was studied. Of these crops alfalfa was the only one that showed uniformity in increased yield. Gypsum supplies sulphur in readily available form and since alfalfa is a heavy user of the element this factor is thought to have been an important one in increasing the yield.

Red clover was benefited in some of the tests and a few of the oat plots seemed to be improved by gypsum. Iowa soil scientists say that since the average crop takes

out 50 pounds of sulphur an acre each year and receives only 15 pounds in return through precipitation the time is coming when it will be a limiting factor on some soils in that State. In some sections it is already needed.

Changes in Crop Report Date

Acreage estimates for spring wheat, barley, oats and other crops, except cotton, will be issued by the Department of Agriculture on July 10 this year instead of June 9 as heretofore. The first report on acreage condition and probable production of cotton will be put out July 2. The June 2nd condition report will be eliminated. A preliminary estimate of wool production in 1926 will be issued July 29, a new addition to the schedule. The report on revised acreage yield of cotton in 1925 will come out May 15 instead of June 2. There will be an extensive acreage survey in June, carried on through rural mail carriers. In previous years this survey has been made in October, the result being used in December acreage revisions.

Finally Got There

From the Congressional Record: The Vice-President also laid before the Senate a message from the President of the United States, transmitting a report by the Secretary of State concerning a request made by the Secretary of Agriculture that legislation be enacted that will give Congressional sanction to the holding of an international conference on soil science in the United States in 1927. This report was referred to the Committee on Agriculture and Forestry. The message was also laid before the House during the course of the afternoon and referred to the Committee on Foreign Affairs.

"Wild" Tobacco Stronger

New York fruit growers using nicotine sprays have been informed by the Agricultural Experiment Station at Geneva that a "wild" type of tobacco, which grows well on the station grounds, contains much more nicotine than the cultivated kinds and could be grown profitably for this special purpose. The percentage of nicotine, it is said, can be made still higher by special methods of cultivation, by topping the plants, and by care in curing the leaves.

Farmers who have equipment for growing cabbage, says the station, could grow this tobacco without any additional equipment. They could make the crop directly into a good insecticide or sell it to manufacturers.

Earth Houses

Houses of rammed earth have been used in past ages and some of them have stood from about the beginning of the Christian era, but little use is made of this material now. Recently, however, the North Dakota Agricultural College decided to study the soils of that State from this standpoint. Various soils will be tested under many conditions, some of them tamped more thoroughly than others, some cured inside, some outside in the sun, and some not at all. It is recommended that those wishing to try this sort of construction, where labor is relatively cheap, should start in with some small structure such as a hog house or garage.

Dr. H. B. Humphrey of the Bureau of Plant Industry, United States Department of Agriculture, built a rammed clay house near Washington a few years ago and finds it satisfactory. In the city of Washington there is a house of this material which has stood for more than a century.

Foreign and International Agriculture

The purpose of this department is to help us understand the scientific, practical, and industrial agriculture of other countries and the international developments which result. The editor believes that such knowledge is now of the greatest importance in our agricultural prosperity. Every care is taken to insure accuracy—both of facts and their interpretation.

Erich Lierke

Dean of the Agricultural Department, German Potash Syndicate

It is now quite a common practice for agricultural business organizations to maintain agricultural service departments. Especially have fertilizer companies in the last few years organized soil improvement committees and technical departments of various types. It is of particular interest, therefore, to give a short account of the work of Mr. Lierke who in his capacity of assistant manager of the potash factory of Consolidierte Alkaliwerke, Westeregeln, in 1885, was one of the first to organize an agricultural department for a large business organization, namely the Potash Syndicate. Besides the distinction of being one of the first organizers of such work, Mr. Lierke has made valuable contributions to the agriculture of Germany and other countries, especially in the fields of horticulture, of vine growing, forestry, and statistics. We are particularly gratified, therefore, to be able to give the following short account of the life and work of Mr. Lierke, the present Dean of the Agricultural Department of the German Potash Syndicate.—THE EDITORS.

ERICH LIERKE, who is the son of a clergyman, was born in Schuellewalde in Upper Silesia, on the 3rd of October, 1861. After spending some time in gathering practical experience in agriculture, on a farm, he entered the Agricultural High School, Berlin, in 1881, where he studied Chemistry and Agriculture till 1884. During the years he spent at the High School, Mr. Lierke worked principally in the laboratories of the Institute of the Beet Sugar Industry and became assistant manager in a sugar beet factory, where he worked for two consecutive seasons.

In May, 1885, Mr. Lierke entered the services of the

Consolidierte Alkaliwerke, Westergeln where he occupied a position in the laboratory, and at the same time, acted as assistant manager in the potash factory.

At this time there were only seven potash mines in existence, namely: Königliche Berginspektien zu Stassfurt; Herzogliche Salzwerksdirektion, Leopoldshall; Consolidierte Alkeliwerke, Westeregeln; Salzbergwerk Neustassfurt Kaliwerke Aschersleben; Gewerkschaft Ludwig II; Gewerkschaft Hercynia, Vienenburg.

These concerns were quite independent of one another but combined by mutual agreement to control the output of Carnallit for industrial purposes and of Kainit for agriculture. The factories producing muriate of potash were, on the other hand, under the control of the Verkaufs-Syndicat der Chlorkaliumfabriken, which controlled the sale of this product since 1883.

THE first steps towards the establishment of an organized educational program were made after the founding of the Deutsche Landwirtschafts-Gesellschaft (German Agricultural Society) in December, 1885, though the Kainit-Department of this society had been at work before this selling kainit, having entered into a contract with the potash mines in February, 1885. In the same year basic slag (Thomasphosphat) came on the market and was recognized as being an efficient phosphatic fertilizer and the use of kainit and basic slag increased continually from this on, under the influence of the educational work done among the farmers by the Kainit-Department of the Deutsche Landwirtschafts-Gesellschaft (German Agricultural Society), supported by the Experiment Stations.

In 1887 Mr. Lierke wrote his first book on manuring "Praktische Düngetafeln", which dealt with the amounts of plant food removed by the different crops from the soil. The sending of an English translation of this book to the United States marks the beginning of an educational program in this country, which was afterwards followed by the founding of the Agricultural Office of the German Kali Works in New York.

In January, 1889, the seven above-mentioned mines combined to form the first Potash Syndicate (Verkaufssyndikat der Kaliwerke) to control the sale and output of all potash salts. Mr. Lierke entered the services of this corporation and opened the Agricultural Office in Stassfurt, on his transfer there, after the Syndicate's building was finished in 1891. The work of this office gradually increased, necessitating it being divided into sub-departments. Branches, managed by agriculturalists, were opened in Germany and other countries in order to keep in close touch with the agricultural world. In 1910 the number of agricultural offices was 40 with a total staff, including clerks of 132.

In the meanwhile the number of mines had increased to 69 and the output of potash salts, which in 1885 was equivalent to 9,030 amounted, in 1910, to 359,516 tons.

On May 25, 1910, therefore, the first law regulating all matters concerning the Potash Industry was passed. The offices of the Syndicate were shortly afterwards moved to Berlin, the present building in the Dessauer Strasse 28/29 being then acquired. In 1914 the Central Agricultural Office in Berlin, together with its 52 branches, in all parts of the world, gave employment to a staff of 231 clerical and technical employees.

After the War 17 mines situated in Alsace were lost and it became necessary to give up some of the

agricultural branch offices owing to trade depression. In April, 1919, a second law was passed which altered the provisions of the Potash Law of 1910, so as to make them suit the altered conditions in Germany.

Mr. Lierke is one of the managers in the present agricultural department of the Potash Syndicate. He not only supervises the work in a definite area in Germany but also administers agricultural work undertaken by the Syndicate in some foreign countries. In addition to the foregoing Mr. Lierke attends to all matters concerning horticulture, vine-growing, forestry, and statistics.

In Westergeln he possessed a small farm, where he grew vegetables and seeds and in Leopoldshall he devoted his spare time to carrying out experiments on fruit trees and vegetables in a three-acre garden, which yielded very interesting results and provided the Agricultural Office with much valuable material for its work.

On the occasion of his 25th anniversary in the services of the Potash Syndicate, Mr. Lierke received the title of Oekonomierat from the King of Prussia.

Mr. Lierke is a member of many agricultural and scientific organizations, being elected an honorary member of the Gartenbau-Verein Stassfurt, the Anhaltischer Gartenbau-Verein, Dessau and the Obstbau-Verein, Werder and a corresponding member of the Deutsche Obstbau-Gesellschaft. As an old member of the Deutsche Landwirtschafts-Gesellschaft he was presented on the occasion of the Society's 40th anniversary, with the Max Eyth Silver Medal, in recognition of his many years' cooperation with the Society. Mr. Lierke has also been presented with the Vermeil Medal by the Deutsche Gartenbau-Gesellschaft and with a bronze medal by the Nederlandische Matschappij voor Tuimbouw en Plantkunde, on their 50th anniversary, on which occasion Mr. Lierke was invited to give a lecture before the International Horticultural Congress in Amsterdam, 1923.

A German potash mine

Partners in Honor

(*From page 28*)

Dougan now cools his milk by electricity, and has a thoroughly modern milk room and barn for the handling of his milk, his first six quarts of milk were as clean and free from bacteria as his present 300 to 400 quarts a day, which is practically always well below the certified requirement. If he can not produce the best quality possible, he will stop producing.

WHEN some one asked Mrs. Dougan what she received the award for, she characteristically replied "for making raisin pies and puddings and roasts." She not only produces good "raisin pies" but also maintains a happy home and extends a welcome to friend or stranger. Her hospitality is always remembered by any person having visited her home.

Mr. Dougan's thoroughness in determining what course is best to follow was very well shown by his discussion of milking machines at one of the farmers' sessions. He felt that he needed machines on his farm, and after inquiring around finally installed them, but did not decide that they were a good thing until he had used them for a year and compared his records with the herd records of the three years previous to be sure that the cows stood the change. He found that it was better for his cows to be milked by machines. He found also that very little total labor is saved by machine, but that it merely evens up the labor better. He believes in using machines for his farm, but not for all farms.

Mr. Dougan attributes much of his success to advertising. He has tried various forms of advertising and is convinced that he could not successfully run his business without it, but he still is trying different kinds. One of the most outstanding things he has done was a milk contest that he held among his customers one summer. He picked out August when it was warm and offered a card of milk tickets to every customer who could keep a quart of milk sweet a week, and more than 50 of his customers won the prize.

THE Dougan Guernsey Farm is a farm well-worth seeing. It has a large round barn holding over 40 cows with a 56-foot silo in the center, and the up-stairs full of alfalfa hay. In order to help solve the labor and horse problem, which is quite big on a large farm such as his has become, electricity is used wherever possible. The silo is filled and the hay put in by electricity. In the milk room electricity cools the milk, caps the bottles and washes the bottles. Mrs. Dougan has as much if not more electrical equipment in the house than most city homes have.

SOMEBODY has said that the man with a handicap is the man who gets ahead in the world. Mr. Dougan is not without his handicap as he is so deaf that he is very seldom spoken to, and then only by members of his family. He has talked over the radio in Chicago, and at many farmers' gatherings in the middle west, and always has to be spoken to in writing.

REVIEWS

Fertilizers

The State Fertilizer Department of the University of Maryland has published a bulletin, the object of which is to furnish prospective fertilizer consumers with advance information relative to the composition of the various brands offered for sale in Maryland in 1926. The bulletin, No. 115 "Commercial Fertilizers for 1926," came out in January as a continuance of a new plan adopted in January, 1925. This idea of publishing information in advance is a clear realization of the sound economic principle that furnishing the farmer with a guide to intelligent buying will react to the benefit of the fertilizer industry as a whole.

The "Potato News Bulletin" December, 1925, is a fertilizer number and contains some interesting articles on the status of potato fertilization in New York, the usage of fertilizers in potato production, quality in fertilizers and an especially instructive article on "How shall Fertilizers be Applied?"

The Extension Service of the United States Department of Agriculture has recently published two interesting briefs concerning fertilizers. No. 3 discusses "Fertilizers for Citrus Fruits" and No. 24 "Cotton Fertilizer." The briefs are excerpts from the annual reports of County Extension Workers.

The State Colleges of Athens, Georgia, and Clemson Agricultural College, South Carolina, have published two practical circulars on the use of fertilizers in their respective States. Both circulars contain maps showing the chief soil regions together with definite recommendations for the use of fertilizers.

The Farm Bureau, Franklin County, Vermont, is arranging for fertilizer tests in cooperation with farmers in the county. The County Agent of Franklin County has also successfully aided in increasing the proper use of lime, both in the stables and on the land. We are always glad to hear of the work of the different Farm Bureaus.

"The Nutrient Requirements of the Strawberry." Agricultural Experiment Station, Michigan State College of Agriculture and Applied Sciences, Horticultural Section, East Lansing. Technical Bulletin No. 70, October, 1925. R. E. Loree.

Soils

The rapidity with which plant residues decay in a soil is a factor of considerable importance in any study of value of sod in rotation. "An Explanation for the Relative Effects of Timothy and Clover Residues in the Soil on Nitrate Depression" is ably presented by B. D. Wilson and J. K. Wilson in Memoir 95, Cornell University Agricultural Experiment Station. Publications of noted soil chemists are carefully reviewed, and appropriate abstracts from their works are presented. The results of the work at Cornell University point to a more rapid oxidation in the soil of the organic matter of clover than that of timothy.

"Prevention of Crop Injury by Windstorms on Muck Land." In a reprint from the Michigan Agricultural Experiment Station Quarterly Bulletin, Nov., 1925, Dr. Paul M. Harmer gives some valuable information on the use of

water, heavy rolling and windbreaks in the prevention of crop destruction by winds on muck lands. The increasing use of muck lands for production of truck crops and the fact that wind is capable of causing great losses during dry seasons, made this discussion by Dr. Harmer very worth while.

"The Bimonthly Bulletin," Ohio Agricultural Experiment Station, Wooster, Vol. X, No. 9, Whole No. 117, Nov.-Dec., 1925.

Crops

A new inroad upon the "much-tooted" independence of the American farmer has been made by the march of Greater Agriculture. Out in California, laws are now being enacted which tell the farmers of certain communities just which variety of crop they may grow. The first news of the restriction by law to the growing of one variety of cotton in certain areas of the Golden State came to BETTER CROPS in a story by County Agent Laurence W. Taylor, published in the December issue. The Editors are now in receipt of Circular 357 of the United States Department of Agriculture, "Production of Acala Cotton in the San Joaquin Valley of California" by Wofford B. Camp. The circular contains a very interesting treatise of the advantages in developing one-variety communities, as well as many helpful suggestions on planting, cultivation, irrigation, and marketing of cotton in that section of the country.

The Department of Soils, Ohio State University, is "up in the air." It is labeling its Timely Soil Topics, No. 92, January, 1926 —*"Radio Lecture No. 1"*. The leaflet, written by Dr. Firman E. Bear, treats in an easy-to-follow style some of the more important factors in the science of crop growing. In speaking of the 20-year fertilizer tests on the Wooster Experimental Farm, Dr. Bear says that even though yields fluctuate enormously because of wind and weather and by reason of the attacks of insects and disease organisms, yet they never fall so low on well-managed soils as they do on those poorly farmed.

Other bulletins include:

"Rose Culture," Michigan State College, East Lansing, Circular Bulletin No. 84, December, 1925, Alex Laurie.

Crop Talk, No. 30, "The Place of Alfalfa in Ohio," Ohio State University, January, 1926, Wallace E. Hanger.

"Vegetable Planting Guide for Western North Carolina," North Carolina State College of Agriculture and Engineering, Raleigh. Extension Circular No. 152, December, 1925. H. R. Niswonger and Robert Schmidt.

"Crop Sequences at Davis," University of California, College of Agricultural Experiment Station, Berkeley, California. Bulletin No. 393, October, 1925. John W. Gilmore.

"Cereal Hay Production in California" by Geo. W. Hendry, "Feeding Trials with Cereal Hays" by F. W. Woll. University of California, College of Agriculture, Agricultural Experiment Station, Berkeley, California, Bulletin No. 394, October, 1925.

"The Mat Bean, Phaseolus Aconitifolius," University of California, College of Agriculture, Agricultural Experiment Station, Berkeley, California. Bulletin No. 396, November, 1925. P. B. Kennedy and B. A. Madson.

"Winter Rye in North Dakota," Agricultural Experiment Station, North Dakota Agricultural College. Bulletin No. 193. T. E. Stoa.

"Colsess Barley," Colorado Experiment Station, Agricultural Division, Fort Collins. Bulletin No. 303, October, 1925. D. W. Robertson and Alvin Kezer.

"Composition and Maturity of Corn," Agricultural Experiment Station, North Dakota Agricultural College, Bulletin No. 192. T. H. Hopper.

Economics

The Extension Department, Michigan State College, has recently published a bulletin No. 45 entitled "A Statement of Policy Towards Agricultural Cooperation." The Michigan State College believes that cooperation should be encouraged and that there are certain advantages which come from it, which are given in detail in the bulletin. The authors also give their opinion regarding agriculture and marketing and the relation of the State College to agricultural organizations.

The Bureau of Agricultural Economics, United States Department of Agriculture, New Orleans, Louisiana, publishes interesting bulletins on the "actual market conditions" of cotton under the United States Cotton Futures Act, as observed by representatives of this Bureau or reported to it. This service, published periodically, is maintained free for anyone who requests it and is of great economic importance.

Diseases

In these days of strict attention to cutting costs of production in agriculture, any new prevention or cure of disease in either plant or animal assumes an unusual importance. Of particular interest, therefore, is a new circular, No. 376, from the United States Department of Agriculture — "A Method for the Control of Crown Gall in the Apple Industry," by M. B. Waite and E. A. Siegler, issued in January.

The circular makes mention of great losses—commonly 25 to 50 per cent and in extreme cases 95 pre cent, occurring in root-grafted apple nurseries from crown gall infection, and explains its purpose in making immediately available to nurserymen and others the new method of greatly reducing the attacks of crown gall.

For the past three years the pathologists have been experimenting with an organic-mercury compound, sold on the market under the trade name "Semesan" and have found it very effective in controlling crown gall without injuring the apple grafts. In addition they find greater convenience in disinfecting with this compound over methods previously employed.

Details of the experiments and recommendations for the control of crown gall with the new disinfectant are attractively set forth in the circular which is available through the Department to all interested agriculturists.

"Blight Resistance in Pears and Characteristics of Pear Species and Stocks," Oregon Agricultural College Experiment Station, Station Bulletin 214. F. C. Reimer.

"Perennial Canker of Apple Trees," Oregon Agricultural College Experiment Station, Station Bulletin No. 217, S. M. Zeller and Leroy Childs.

Insects

"Control Methods for Peach Insects," North Carolina State College of Agriculture and Engineering and U. S. Department of Agriculture, Cooperating N. C. Agricultural Extension Service, I. O. Schaub, Director State College Station, Raleigh, Extension Circular No. 153, December, 1925.

"The Blackberry Mite, The Cause of Redberry Disease of the Himalaya Blackberry, and its Control," University of California, College of Agriculture, Agricultural Experiment Station, Berkeley, California, Bulletin 393, December, 1925, E. O. Essig.

"Spray Bulletin," Connecticut Agricultural Experiment Station, New Haven, Connecticut, Bulletin 271, January, 1926, W. E. Britton and G. P. Clinton.

"Report on Commercial Insecticides and Fungicides 1925," Connecticut Agricultural Experiment Station, New Haven, Connecticut, Bulletin 272, December, 1925.

The first Spring birds

Pooling Brains

(*From page 6*)

prevalent the committee advised the use of fertilizers carrying 2 per cent of magnesia (MgO) in addition to the phosphoric acid, ammonia and potash. The magnesia may be derived from sulfate of potash magnesia, dolomitic limestone, or any other material carrying magnesia in forms known to be available to plants.

IN reference to the amount of fertilizer to use it was advised that applications of 800 to 1200 pounds per acre be made in the drill at or before planting. The importance of liberal applications of fertilizer in tobacco is well shown by the results secured in Virginia. One of the most striking results from the fertilizer tests at the Virginia Experiment Station has been the large increase in yields from heavy applications of fertilizer. The quality of the leaf has also been improved by the heavier applications. These results are shown in the table. These figures are for bright tobacco, but similar results have been obtained with both the sun-cured and shipping types. This table represents the average of 10 tobacco crops, 9 wheat crops, 14 hay crops and 7 corn crops. The tobacco was the only crop fertilized in the rotation, the others getting only the residual effects of the fertilizers.

Increasing the amount of fertilizers used from 700 to 1,400 pounds has increased the returns from tobacco $95 an acre. This would leave a handsome profit from the use of the additional fertilizer after paying for hauling and distributing the fertilizer, and handling the increased crop, when only tobacco is considered. However, each of the other crops in the rotation was materially increased following the heavier application of fertilizer. If corn and wheat are valued at $1 a bushel and hay at $20 a ton, the total returns from the use of an additional 700 pounds to the acre, through the rotation, amounts to $112.87.

A RECENT survey of the cost of producing tobacco in a part of the bright tobacco belt shows that the average amount of fertilizer used was about 700 pounds to the acre. These figures indicate that materially increasing the average amount of fertilizer used is profitable.

EFFECTS OF HEAVY AND LIGHT APPLICATIONS OF FERTILIZERS IN TOBACCO ROTATION.

Yield and value per acre of crops

Amount of fertilizer applied per acre	Tobacco Yield, lbs.	Value	Wheat Yield, bus.	Value	Hay Yield, lbs.	Value	Corn Yield, bus.	Value
1400 pounds 8-3-3	1038	186	9.0	$9.00	1040	$10.40	31	$31
700 pounds 8-3-3	648	91	5.3	5.30	623	6.23	21	21
Difference	390	95	3.7	3.70	417	4.17	10	10

As to the sources of the plant food constituents, the committee recommended that the phosphoric acid be derived from acid phosphate and the potash from sulfate of potash magnesia, muriate of potash or sulfate of potash. There has been considerable discussion as to the relative value of potash in the form of sulfate as that in the form of muriate for tobacco. The committee studied this question very carefully and came to the following conclusion: "Available experimental data at this time from bright tobacco sections of North Carolina and Virginia have shown that muriate of potash generally produces tobacco of equal or better yield and market value than that produced by sulfate of potash. In view of the fact, however, that experiments have shown that an excessive amount of chlorine in fertilizers used on tobacco injures its burning quality, it is recommended that such fertilizers to be compounded with the above named sources of potash in such proportions that the fertilizers shall contain not more than one unit of chlorine for two units of potash."

It may be said that when one-half of the potash is secured from muriate of potash and the other half from either sulfate of potash or sulfate of potash magnesia that the fertilizer will contain approximately one unit of chlorine and two units of potash.

The sources of ammonia for bright tobacco demand careful attention. The market value of the crop depends to a great extent on the form in which the ammonia is supplied. The recommendation of the committee in regard to the sources of ammonia was as follows:

For the Coastal Plain section: "One-half of the ammonia should be derived from organic sources; preferably cottonseed meal, tankage or fish scrap, and one-half from nitrate of soda or sulfate of ammonia; provided that at least one-half of the inorganic nitrogen be derived from nitrate of soda." For the Piedmont section: "One-third of the ammonia should be derived from organic sources; preferably cottonseed meal, tankage or fish scrap; and two-thirds from nitrate of soda or sulfate of ammonia, at least one-half of the inorganic nitrogen being derived from nitrate of soda."

THE sun-cured and shipping types of tobacco, unlike the bright type, are commonly grown on the most productive fields of the farms. They are not greatly injured by an excess of ammonia, and legumes and manure may be supplied in liberal quantities with good results. But these types also must have a liberal quantity of plant nutrients available at all times and, therefore, require fertilizer in addition to good soil building practices. The committee recommended for ordinary soils 600 to 800 pounds per acre, in the drill at or just before planting, of a fertilizer containing 8 per cent available phosphoric acid, 3 per cent ammonia, and 3 per cent potash.

However, it is sometimes advisable to use a different analysis, as on a sandy soil, low in organic matter. Under such conditions a 8-4-4 fertilizer could be used with profit. In the production of sun-cured and shipping tobaccos the ammonia and potash may be reduced on the red soils which have been made very productive by the use of manure and legumes and sometimes under these conditions only acid phosphate is necessary. However, where one is not sure of the soil conditions, the standard

8-3-3 fertilizer will usually give the best results.

In reference to the sources of the plant food constituents the committee advised that the phosphoric acid be obtained from acid phosphate, and the potash from muriate of potash, sulfate of potash or sulfate of potash-magnesia. The same recommendation in regard to the use of the potash salts for bright tobacco will hold good for the dark tobaccos. In regard to the source of ammonia the following recommendation was given. "Two-thirds of the ammonia from organic sources, preferably from cottonseed meal, tankage or fish scrap; and one-third from nitrate of soda or sulfate of ammonia, provided that at least one-half of the inorganic nitrogen be derived from nitrate of soda."

In conclusion, it may be said when the available data on tobacco experiments are studied one of the striking features revealed is the ready response of this crop to liberal applications of fertilizers. This condition is probably due to the fact that tobacco makes a comparatively large growth in a very short time and in order to secure the best production there must be a liberal quantity of available nutrients accessible at all times.

* * *

Rat Control

(*From page 24*)

that supplied by a rodent specialist and possibly by the school board and boy scouts, or other single organization. No funds are necessary unless the farm bureau or other organization desires to distribute poison free. Local organizations should not be asked to cooperate unless they are of the live-wire variety and sufficiently interested to lend active and dependable assistance.

Usually in a county where rats are abundant and destructive the people will be found apathetic toward their control and then very little cooperation can be expected. Yet it is in just such counties that rat control measures are most needed and the greatest good can be accomplished. Under these conditions it is advisable to begin the campaign in the schools, where instruction on the destructiveness of the rat and its relation to the public health is more apt to bear fruit than with the adult members of the community.

A simple and effective way of reaching the children is to address a circular letter to all school teachers of the county, with the permission of the county superintendent of schools, outlining a talk on rats and inclosing a bulletin on the subject, together with the request that each teacher give the talk in the school room. This talk may be supplemented by an invitation to the rural schools to attend a nearby rat-control demonstration.

In exceptionally progressive counties rats will be found relatively scarce, yet keen interest will be shown in getting rid of the few that are there. Most successful campaigns may be conducted in such counties.

Regardless of local conditions, however, a rat campaign will be of benefit to virtually every county in the United States and a plan of operation adapted to the needs of each county can be devised with the assistance of specialists in rodent control.

Why Farm Electrification Drags

(*From page 17*)

is used only occasionally is required. This means excessive overhead. Experiments have been started in several states to determine whether such operations as threshing and shelling could be extended over a longer period, so that they might be done by electric power with small motors.

GRINDING feed is a job that lends itself to the continued and regular use of electric power. In Iowa investigators have found it handy to grind feed electrically with a small grinder supplied by a magazine bin. It is likewise feasible to regulate pumping so that current can be consumed when other electrical equipment is idle.

As yet, invention has not gone far in solving the problem of electric traction on the farm. Experiments with both cable outfits and motor driven by storage batteries are under way, and while promising have not yet produced anything fully practical. Wireless transmission of power has been acomplished under laboratory conditions, and the field here opened is tremendous. But even if the problem of electric traction is not solved for many years, there is wide scope for the increased use of electricity in agriculture.

A few of the opportunities may be cited. They have recently been assayed by the Department of Agriculture, and what follows is according to that authority. House heating and cooking by electricity are not yet generally economical. They may be in the near future, however, should increasing fuel problems spur inventive genius to devise improved electric heating and cooking equipment.

Motors developing from one to eight horsepower will do all the ordinary power work on the farm, such as pumping and light stationary jobs. For threshing, silo filling, feed grinding, etc., motors developing at least 20 horse power are usually required.

Mother's work is fun in this modern farm kitchen

One experiment, however, showed that a small thresher having a 28-inch cylinder and 42-inch separator could be driven by a 15 horsepower motor with a power consumption of 2.62, 2.36, and 2.7 kilowatt hours per ton of oats, barley and wheat respectively. Silo filling has been done cheaper by electricity than by steam.

Electricity has been found useful in the production of certain crops. Experiments at the New York Cornell station showed that the influence of the electric arc light on greenhouse plants promoted assimilation, hastened growth and maturity, produced natural flavors and colors in fruits, and increased the production of flowers. Lettuce was greatly benefited, and radishes, beets and spinach were somewhat benefited by electric treatment.

The investigators concluded that the artificial illuminaton of certain crops by electricity as a means of hastening maturity offered considerable possibilities. Electricity in dairying and poultry rasing is no longer a novelty. In dairying its uses are manifold and are increasing. Extremely promising results have been obtained from the use of electric light for increasing egg production, since it stimulates the birds to greater activity and food consumption.

Electric heaters and smudges for the prevention of frost injury in orchards have shown that when electric heaters are distributed about in the same manner as smudge pots, the conversion of 100 horsepower of electrical energy into heat in the open air will cause a temperature rise of 20 degrees Fahrenheit with an outside temperature of 70 degrees. In large fruit producing regions this use of electricity may be very valuable. A use for electricity has been found in the dusting of cotton fields by airplane in the fight against the boll weevil. Drainage and irrigation pumping by electricity is well developed.

It would take a book to list all the practicable and possible uses of electricity in farming. Though the use of electricity in agriculture is only in its experimental stages, it holds out extraordinary prospects. But to realize these prospects, the farmers and the power companies will have to cooperate.

THE problem, in short, is to create new motives for farm electrification. It is not for himself that the farmer chiefly wants electric service, but for his wife, since man's work on the farm can be lightened by other means. But the emancipation of the farm wife from needless drudgery depends on her sharing the instrument of that emancipation with her husband, because housework alone does not call for enough current to make the business of supplying it profitable. Eventually, no doubt, electrical progress and invention will make electricity an economical source of power for farm work.

Meantime, faith that the goal will finally be reached seems to be necessary. With such faith, the farmer for certain jobs might be willing to pay a little more for electric power than he would have to pay for other kinds of power, so that his wife could have the benefit of it.

On the other hand, the power companies might find it good business not to press their demand for a full economic return from farm electrification right at the start. They might make an investment in the future, in the shape of a rate system calculated to promote a more liberal use of current on the farm. Longer chances have been taken by American business, without bad results.

Looking Ahead

(*From page 26*)

Probably this is a year to slow up the process of converting western sod into cotton fields. It may be advisable to reduce cotton acreage all along the line. But those who take that view must consider that question of what to plant instead.

Potatoes have been a headliner in prices this last season. The acreage in 1924 was by no means large but the record yield of 127 bushels per acre swamped the country with potatoes. In 1925 growers cut the acreage 7 per cent further and this was followed by an 18 per cent reduction in the yield per acre (it being 103.8 bushels). It seems entirely reasonable that potato acreage might be increased 10 per cent this spring. A yield per acre of 110 bushels, which would represent a not unreasonable expectation, would then produce a crop of 377 million bushels which ought to be absorbed at profitable prices.

The trouble is that after a year of high potato prices growers are apt to plunge into an extensive acreage and so smash the market the following year. So far as I can size it up there is no particular danger in increasing potato acreage this spring say 10 per cent but if it goes much beyond that and the growing season proves favorable, look out for the potato market next fall.

The hog situation supplies a distinct note of optimism. The number of hogs in the areas of commercial production is the smallest since 1921 and for the entire country the smallest in many years. Stocks of pork and lard are the second smallest in 10 years. The number of hogs in sight for slaughter from next June to October is estimated at from 1½ to 2 million head fewer than in the same period last year.

Since there is some indicated increase in the number of sows bred for spring farrowing, it is probable that the supplies available for market next winter (November 1, 1926, to May 31, 1927) may be about like or slightly larger than during the winter of 1925-26. Although top prices may not reach the peak of last year it is probable that hogs will still sell at very profitable prices for a year yet to come.

THE beef cattle outlook is, in a nutshell, better. Just what that means for prices within the next year is difficult to say. It may not mean so very much. The breeding herds in the West have apparently been about maintained. But the number of steers has been declining at the rate of about half a million head a year for the last six years and is now more than 30 per cent smaller than in 1920. Without discussing the statistics of various beef and dairy classes in detail it may simply be said that the beef cattle industry has turned a corner from its long fit of depression and is now apparently headed toward an equally long period of improvement.

The dairy industry is in reasonably strong position. During the last year there has been some contraction in eastern market-milk herds. This is especially evident in calves and young stock. The number of dairy heifers was about 9 per cent fewer on January 1, 1926, than a year previous and likewise about 9 per cent fewer calves were raised last year than in 1924. This means that there is not likely to be much increase in

the number of milk cows for at least two years to come. Of course, production of milk and butter is already heavy enough, from the standpoint of maintaining a profitable price level. But the industry is in good adjustment, everything considered.

THE sheep industry has been remarkably prosperous for four years and flocks have expanded both in the range country and on farms. It may be that we shall not go along forever with such relatively high prices for wool and lambs. A marked industrial slump, for instance, with unemployment and less prosperous times in the cities would probably hurt the market for both lambs and wool. However, there is nothing in sight to discourage those men who are raising sheep as a permanent and carefully handled proposition. Men who are tempted now to plunge into the sheep game in a sort of speculative mood might do well to think twice. Prices of ewes now are pretty high.

GOING down the line of the major agricultural enterprises, as I said in the first place, this is not a year for discouragement. That is more than could have been said of any year between 1920 and 1924. We are back within hailing distance of moderately prosperous times. What is more important, we are back where real daylight begins to show ahead for those years when today's young men will be the farmers.

Meanwhile, it will be good business to remember that it is not the price of the seed that will tell the story of this season's profits but the price of the crop that comes out of the ground next fall.

* * *

The Montezuma Marsh

(*From page* 16)

Here, huge motor trucks are lined up, waiting for the crates to be brought in from the muck. These trucks bear the celery away to the cold storages at Savannah, North Rose, Wallington and Lyons.

Snyder personally supervises all his operations, although his home is a number of miles away. During harvest, his presence speeds up the clearing of each block by one-half hour. This means that 50 actual labor hours are saved on each block and is a striking example of what the presence of the owner means in dollars and cents saved.

Snyder's holdings are known as the Waycony Gardens and the other holdings as the Montezuma Gardens.

Such is the story of one of the most important muck developments in recent years. This area is truly a garden from which goes forth food products to feed a hungry world. It is not exploitation; it is sound business.

An S. O. S. For Corn

(*From page 20*)

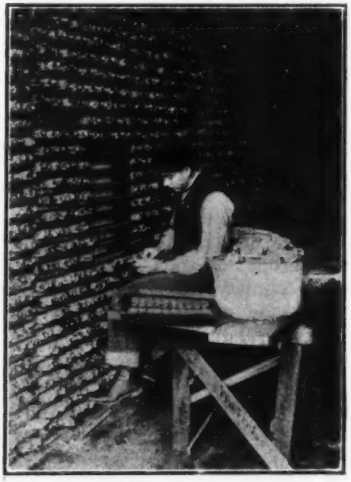
and tested it. We learned something about corn in the crib. We found that corn on top of the crib might germinate 90 per cent or better, yet the balance of the crib be so poor as to be unfit for seed. The best corn was on top, on the sides and in the corners where it had the chance to dry. The poorest corn was in the center, and this took the largest part of the crib. In checkihg a crib we always took 400 or 500 ears from every part and then gave these ears a six-kernel test. It pays to be careful.

We liked to get corn that tested above 75 per cent crib run. We never handled anything that ran lower. On 90 per cent crib run, by saving the "fives" and "sixes" we were able to get corn that would germinate close to 95 per cent. "Fours" were not saved. They are too low and under wet, cold or unfavorable conditions are likely to cause trouble.

PERHAPS the two best testers that can be used in a seed corn station are the rag doll and the 100-car wood strip tester. The latter we like the best because it is very accurate, fool proof, is easily used under varying conditions, and where several men are at work, is beyond doubt the most satisfactory. In them corn grows uniformly and can be read out in the same way by different people. If the rag doll is used 70 pound water finish fiber paper should be rolled up with it to prevent the spread of mold through the cloth to other ears.

The box tester is two inches deep, 16 inches wide and 17 inches long, inside, and fitted with a galvanized tin bottom. It is fitted with 10 one and one-half inch wood strips each containing 10 one and one-quarter inch holes, making a capacity of 100 ears. We placed 1/4 of an inch of saturated, well rotted sawdust in the bottom, put in the sticks, then covered them level full with the saturated sawdust.

The testers were kept in what we called a "bungaloafer." This was a common hand truck 3 by 5 feet, on wheels with a frame built on top to support a canvas to hold in the heat. It could be easily moved about and was pulled over



Racks in testing station

the radiator in the evening, the amount of heat being regulated by the flap in front. Kept at a temperature of 100 to 110 degrees in the night the testers could be read out on the fifth or sixth day. The strips were removed to facilitate reading. Everything in the station was numbered from left to right, and everything was carefully checked and rechecked.

The men working in the station were instructed to stop their work to explain to all visitors just what we were doing. Occasionally some "cocksure" jackknifer would come in who knew all about seed corn without testing. But he always had the conceit taken out of him before he left because there was always plenty of corn on test and always some ready to read out. Relatively, perhaps only a small amount of seed corn can be handled at a testing station, yet the value of it as an educational demonstration large enough to attract the attention of all the people of the county is of the greatest value.

But there are other things that may be done, and some of them may not always fit in well with the situation in the county. These must be left to the judgment of those in charge. The seed corn situation is so bad in many counties of the corn belt that it should challenge the best thought of those who are entrusted with the execution of this educational movement. Our whole agricultural, educational organization in all of its branches from the county to the colleges, has here another splendid opportunity to demonstrate to the people the value of this service in times of such an emergency and to justify the expenditure of the funds which the people have willingly given to its support.

* * *

Tune in on This

(*From page 9*)

will deal with livestock, on Tuesday with crops and soils, on Wednesday with poultry, on Thursday with fruits and vegetables, and on Friday with dairying.

"A special program for farm women, known as the 'Housekeepers' Half Hours,' was started at the same time as the question feature. This will consist of chats on various home problems that have been cleared up by research in the department.

"On March 1, when many persons were looking over their garden tools and watching the buds for signs of green, many stations began introducing 'Uncle Bert, the Garden Expert,' a character Mr. Pickard has created to give boys and girls the best the department has to offer on gardening and nature study. The program will be carried on in dialogue, questions being asked by boys and girls and answered by 'Uncle Bert.' Boys and girls who enroll in the club by writing the department will be sent copies of the talks and other gardening information.

"SAM PICKARD had some experience with the air before he became a radio 'windjammer.' During the war he was a lieutenant in the air service and had many a brush with the Germans. He then took up commercial aviation for two years before going back to Kansas to finish his college course, becoming extension editor upon graduation from K. S. A. C. While in this work he developed the possibility of radio as a means of taking the college to the country by the air shortcut which made Kansas outstanding in this field."

A Boy Who Became President

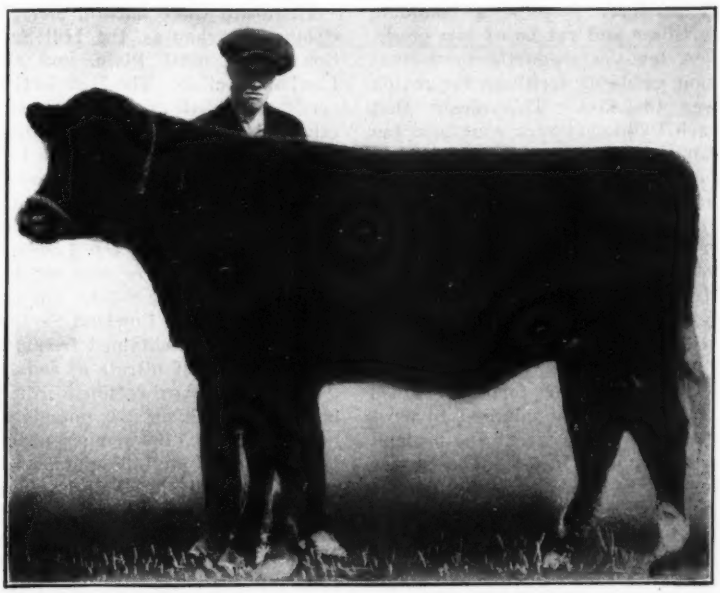
By Allyn H. Tedman

County Agent, Arapahoe County, Colo.

"GREAT trees from little acorns grow." Likewise great men from little boys grow. The greatest service that the Extension Worker can render is to help these little boys grow into great men. There is a reward in seeing a boy develop from an ordinary country boy into a community leader, then possibly on to greater heights, and all from the inspiration he derived from his club work.

At Bennett, Colorado, there once was a boys' calf club. The boys selected milking Shorthorns for their breed. Several of their fathers also bought into the same cattle. Eventually these local Shorthorn breeders organized under the name of the Tri-Valley Shorthorn Breeders Association. Fred W. Haupert, the father of one of the club boys, has since its birth, been the secretary of this organization. At its last annual meeting it elected as its president, his son, Millard W. Haupert, an eighteen-year-old boy and a calf club member.

Millard did some pig club work as far back as 1918, but did not get a start in his calf club work until 1921. This calf, that is his first calf, was bought by the County Agent and his father for him. Later he lost it when it reacted to a T.B. test. Then he got busy and sold some grade cows and calves he had raised and with this money he bought one pure-bred heifer. Today he owns six



Millard W. Haupert and Goldenbelt Mary

real good ones. He won first in his class in 1925 at the Western at Denver, and with the same heifer, Goldenbelt Mary, he won Grand Championship at the Tri-Valley show held at Bennett.

In all his ups and downs he has had considerable loss, but he has the kind of stuff in him that wins in the end. At the recent annual Tri-Valley banquet and speech fest, Millard appeared for the first time as President of his organization. It meant a lot for a boy to win such a distinction among men, breeders, all of whom are many, many years his senior. And Club Work gave him his start. Club Work showed him the way, and the Extension Workers who originally opened the door of opportunity to Millard should feel a rich reward to see how well their seed has matured.

* * *

Fertilizers for Cotton

(*From page 21*)

It is not enough to say we need all three of the common fertilizer elements. The important things are: first, the proportion of the elements in the fertilizer, and second, the amount of fertilizer to use per acre. A great mistake which many make is to buy fertilizer by the ton rather than by the grade. A fertilizer may be a complete fertilizer and yet be of low grade.

A few years ago the most common grade of fertilizer for cotton was 10-1.65-2. This means that each 100-pound sack contained ten pounds of phosphoric acid, 1.65 pounds of nitrogen, and 2 pounds of potash. Such a fertilizer is very poor for cotton. Even if it sells as cheap as it should, it is a very expensive fertilizer, because it is too low in its nitrogen and potash content. Some farmers are still buying this low grade 10-1.65-2 fertilizer.

The grade of fertilizer which seems to be best adapted to most Arkansas soils, except the lowland sections, is a 10-4-4. The proper amount to use is about 400 pounds per acre. Since the grade shows the pounds of each plant food element in a 100-pound sack, it is seen that four sacks of 10-4-4 fertilizer would supply 40 pounds of phosphoric acid, 16 pounds of nitrogen, and 16 pounds of potash.

The old custom of using two sacks per acre of 10-1.65-2 fertilizer did not supply enough of anything, and especially not enough nitrogen. Even 400 pounds of 10-1.65-2 fertilizer would supply only 6.6 pounds of nitrogen per acre.

There are three natural soil divisions in Arkansas, the Hill Section, the Coastal Plain, and the Lowland Section. The Hill Section needs phosphate more than any other plant food. Four hundred pounds per acre of either 10-4-4 or 12-2-4 should be used for cotton in the Hill Section. In the Coastal Plain, use 400 pounds of either 10-4-4 or 8-4-4. In the Lowland Section on the lighter soils use 400 pounds of 8-4-4 or 8-5-4. On the heavy soils of the Lowland Section good results are obtained from 100 to 200 pounds of nitrate of soda.

A good standard cotton fertilizer is made by mixing 200 pounds of acid phosphate, 100 pounds of nitrate of soda, and 30 pounds of muriate of potash. This is about the right amount per acre. In the Hill Section a little more phosphate may be used, and in the Lowland Section a little less phosphate.

Budding and Grafting Apple Trees

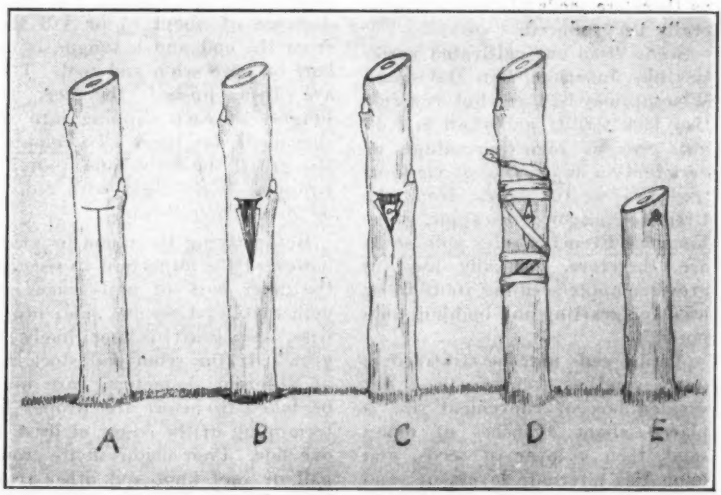
(From page 27)

and the methods are so simple that anyone of average intelligence can perform the work successfully if he so desires.

With proper training and experience the fruit grower may be able to propagate in a satisfactory way the fruit trees required for planting. Few, however, will take the time to follow directions and practice diligently enough to acquire the skill necessary for successful and economic propagation. The reliable nurseryman, therefore, who makes a specialty of the business of grafting and budding fruit trees is generally able to produce better stock at a lower cost than the average fruit grower or farmer. The grower will also save from one to two years' time in bringing the orchard into bearing by buying the fruit trees needed from a reliable nurseryman instead of endeavoring to propagate them himself.

The best trees which can be secured will in the end be the most economical and profitable. Success or failure may depend upon the vigor of the nursery stock used. Whether propagated at home or purchased from a commercial nurseryman, the importance of obtaining the best nursery stock cannot be overemphasized.

SCION WOOD is usually cut sometime during the late fall or early winter from unfrozen, well-matured wood of the last season's growth. One-year-old wood is preferred because experience has shown that its buds are more likely to grow successfully upon the stock than the buds from wood two or more years of age. The length of the scions will depend upon the amount of growth during the past season. This may range from 10 or 12 inches to 20 inches or more.



Shield Budding

A—T cut, B—bark spread, C—bud inserted, D—bud tied, E—top removed

Scions should not be cut too long for convenience in handling and storing.

Water sprouts may be used if the wood shows no winter injury, is firm, well-matured, and provided they do not originate below the graft. If the water sprouts used as scions come from the root below the graft, they produce seedling trees which are generally worthless or very inferior.

The scions should be tied in bunches of from 25 to 50, stored in damp sand or green sawdust and placed in a cool cellar or cold storage. When scions are kept in a room which is too warm they may start growth and be unfit for use; while if kept too wet they may rot or be severely injured.

THE natural method of propagating the apple is by means of apple seeds. The apple, however, like most of our cultivated fruits, does not come true from seeds. As many different varieties, therefore, as there are seeds planted will generally be produced.

Seeds from our cultivated varieties like Jonathan, Ben Davis and Winesap may be used; but as a rule they lack virility and vigor and do not give as high percentage of germination or produce as vigorous seedlings as the seeds from the French Crab or wild apple. The so-called French Crab apple seeds are, therefore, generally used in growing apple seedling roots to be used for grafting and budding purposes.

Apple seeds may be stratified in damp sand as follows: In a flat wooden box of convenient size is placed about 2 inches of damp sand, then a layer of seeds, and upon this alternate layers of sand and seeds are placed until the box is filled or the work is complete. The box containing the seeds may be placed flat on the ground outdoors and covered with strawy manure to a depth of about a foot in order to prevent severe alternate freezing and thawing. Since the seeds begin growth early in the spring, the soil in which they are to be planted should be prepared in the fall or early winter by deep plowing. It is important that the soil be deep and rich; otherwise straight, long roots of the kind convenient and suitable for grafting purposes cannot be produced.

While the seeds are generally planted in the spring, they may be planted in the nursery rows during the late fall or early winter, in which case they are likely to give just as good or better results than spring planting. By fall planting directly in the nursery row, the seed stratification work is eliminated.

In making the draft, a sloping cut about 1½ inches long is made on one side of the upper end of the seedling root. The same kind of sloping cut is made on the lower end of the scion. The knife is then placed on the sloping cut at a distance of about ¼ or 1/3 inch from the end and a tongue is cut here on both scion and root. They are then pushed together, the tongues of each slipping into the slits made for them. To complete the graft, the scion and root are wrapped fairly tight with No. 18 or 20 knitting thread.

Before tying the union or graft, however, it is important to see that the inner bark of both comes together at least on one side; otherwise, the graft is not likely to grow. If the scion and stock are of different diameters, care must be taken to insure the proper interlapping of the edges, at least on one side. Poor unions invite crown gall or root knot and other troubles. The weak cotton string with which the stock and scion are wrapped will decay rapidly and cause no injury when the grafts are

set in the soil. The finished graft, including the scion and root, should be about 8½ to 9 inches long.

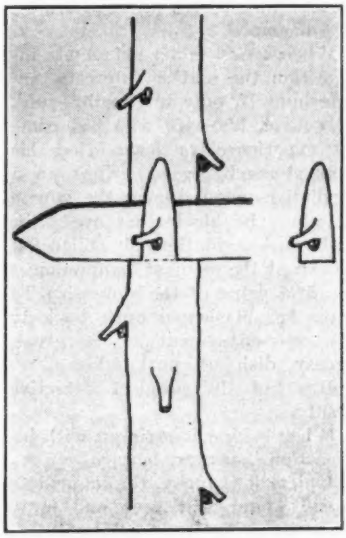
The grafts should be packed in bundles of 50 to 100 each and stored in damp sand or green sawdust and placed in cold storage, a cool cellar or a callus pit until they are set in the nursery row in the spring. The grafts may be planted either in holes made by a "dibble" or along the smooth, straight edge of a furrow made by a plow. In either case, it is important to leave only the top bud of the scion above ground and to pack the soil firmly around the base of the root or graft.

If the young trees receive frequent shallow cultivation throughout the spring and summer, they should grow to a height of 2½ to 3 feet or more when they are considered large enough for transplanting as "one-year-olds" any time during the late fall, early winter or the following spring. They may also be dug and stored in moist sand or green sawdust. If the trees are not large enough in the fall for transplanting or if there is no ready sale, they may be left undisturbed in the nursery.

The apple may also be propagated by budding. The method employed is similar to that used in the propagation of stone fruits, such as peaches, cherries and plums. Seedling apple trees not more than one year old are generally best suited to shield budding.

The main budding work is usually done, however, during July, August and early September. The buds are placed within a few inches of the ground on the north side of the seedling to protect the bud from the sun. In about a week or ten days the string used in tying the bud to the seedling is cut on the south side. Nothing more is done to the inserted bud or seedling stock until early spring when the tops of the seedlings are cut off just above it. Sprouts which may arise at the base of the seedling are rubbed off at regular intervals and the inserted bud is forced. With good culture and growing conditions the budded trees should be large enough for sale or transplanting after one year's growth.

A budding stick consisting of a twig of the current season's growth having several buds is selected from the variety that is to be propagated. The leaves are removed, leaving a portion of the leaf stem or petiole to serve as a handle in inserting the bud. A T-shaped cut is then made as near the ground as possible. A shield-shaped piece of



Removing bud for insertion in stock

bark is cut away from the budding stick, including a bud in the center. The bud is inserted in the T-cut by carefully raising the bark from the wood and pushing the bud downward until it fits smoothly against the wood beneath the incision of the bark. After the bud is inserted it is tied in place with raffia or cotton twine.

Beware the Moods of March

(*From page 4*)

A MAN'S mood is a mental state created, I am now positive, by some physical condition, either within himself or without, over which he has no or poor control.

What we call Fate is often no more and no less than a set of conditions put in motion by a mood. To study moods, therefore, is to study Fate.

Who can say, as they delve into History, how many sudden and abrupt changes in the course of the world's progress, were due to moods caused by a physical frailty in someone?

When a coal miner gets acute indigestion the matter interests, beside himself, only his doctor—and, of course, his wife who has come by experience to learn that his sour stomach always brings on a vindictive mood during the course of which he blacks her eye! She feels, in imagination, his sullen fist almost at the moment he announces the first gripe of the stomach. To trace her blackened optic back to his over-enjoyment of a great, greasy dish of porkpudding requires but the simplest detective ability.

When a king is stricken with indigestion, however, *beware!*

Unless it is lucky, the immediate world about will veer and sway from its accustomed orbit; it will swerve and tremble and have conniptions of a high order!

Ultimatums which issue from under his trembling, dyspeptic fist show the tenor of his malady—and his subjects undeservedly suffer. The upset organ may bring on a mood of despotic temper which distorts momentarily his customary good judgment, and his irritability may o'ernight wreck a great nation or change century-old habits of belief.

Marat's skin torture undoubtedly influenced his state of mind so strongly that to an inflamed epidermis can be traced the orgies and massacres at Abbeye Prison and at La Force!

Mary Tudor's childlessness, we now know, caused Phillip not only to lose interest in her, but to settle into a vindictive mood which caused him to rage against his enemies, taking out upon them the wrath he felt for Mary Tudor.

On the 19th of October, 1812, Napoleon, with a malady that precluded more than three hours' sleep at one time, found himself in an unenviable mental mood. He knew himself to be absolutely unfit to cope with the Russian peasants then uprising against him. So, with a feeble gesture of impatience, he ordered certain parts of the Kremlin to be blown up, and stole silently away in shame!

Drowsing and slumping—his ordinarily brilliant mind confused and distressed in its unaccustomed mood—he lost the chance that would have made Russia his slave.

THE greatest strength is to know your own weaknesses, see them clearly, look at them without fear, but with understanding—then throw safeguards around them as men erect a steel fence around the cage for a ferocious animal. Put barriers around your failings so they cannot harm you.

When you realize that you are the innocent and undeserving victim of natural moods from which there is no escape; when you realize that your mental states are variable through no voluntary motivation on your own part; when you understand that Nature's law of periodicity is be-

ing worked out within yourself—that you are affected as is all else in Nature—then you can knowingly plan against the effects of these mental states and intelligently erect bulwarks against their effects.

You cannot always prevent those moods induced by outside conditions; not always can you safeguard your mind against the inroads that your own body makes against it.

But you *can* study yourself and see to it that you make no abrupt decisions while in the wrong mood!

You will often be the victim of another man's moods. This you cannot help. It is a part of life. The most you can do is to build yourself fences which keep his moods from tearing out at you, file his claws and dull his teeth.

I know a captain of industry—the head of a great enterprise and employer of thousands of men. He can seldom see all of his branches nor all of his men; he is dependent, therefore, upon reports sent in to him from all parts of the country. Part of his success lies in the keen manner in which he analyzes these reports and takes the action for which the information so compiled seems to call.

But, when he receives a report he does not act immediately upon it. Instead he has a private secretary who investigates for him, not the facts in the report, but the *mood* of the man who made it out! He trusts his men to give the correct information, but he has intelligence to know that the moods of men form their motives, and that moods can color facts until they are unrecognizable!

A discouraging report from his Kansas City branch recently set forth figures which tended to prove that the branch was not only unsuccessful, but that for certain reasons duly set forth it could never be successful. The investigation by the secretary, however, showed that the branch manager had been in a very despondent mood for weeks while working on the report—had had family trouble at home, wanted to get out of Kansas City and be transferred to another branch.

This branch manager had not falsified his report exactly—he had merely made the bad facts look worse, and hidden the good facts in a "mess of verbiage."

Had my friend, the President of the Company, acted upon the report alone, without investigating the *mood* and the motive behind it, he might have closed up a branch which has since become one of the most profitable he has. Instead, he continued the branch under other management, transferred the man and endeavored to patch up the fellow's family difficulties.

IT is my observation that moods visit all; that they can be partially avoided by adopting strenuous mental methods; and that the *bad effects* of moods of any kind can be eliminated by carefully avoiding any decisions or any work while in the wrong mood.

Do not decide to leave your job while you have indigestion. Tomorrow the sun will shine brightly, your stomach will behave, and you will wish you had your job back.

Do not fire a valuable employee in a fit of temper. Tomorrow, your mood will be different and you will give your right hand to get him back.

Watch your moods. Especially watch them in March. For doctors tell us, and insurance statistics prove, that during this month your vitality is lower than at any other month. You are tired of winter, your blood is thick, your muscles are weak, your brain is worn out. Make no moves in March that you will regret in April.

Beware the Moods of March!

Bill Wallace, who spent most of his last month in New York City, gave a complete report of his experience immediately upon his return

"It may surprise you to find it out," he declared, "but them city fellers is plumb afraid of a little snow. Soon's the first few flakes begins to come down, they beat it fer their shovels an' begin scrapin' like mad, actin' like they thought the stuff was pizen.

"After a half hour they're runnin' funny lookin' scrapers along the streets, rollin' the snow up in big piles. In another twenty minutes about a million men comes out an' begin to load the piles into trucks. I never seen such darn foolishness. Just imagine me haulin' all the snow off'n my place with a truck!

"The most interestin' thing I seen though was a lot of machines like hay tedders mounted on little tractors, scoopin' up the snow an' dumpin' it in trucks with a conveyor chain. A lot of women was standin' around on the sidewalks, watchin' an' gaspin', 'Ain't that wonderful!'

"That shows how dumb them city people are. If they think a snow-handlin' hay tedder's wonderful they ought to see somethin' really wonderful, like a grain binder, or a p'tater digger, or a thrashin' machine. That's the trouble with city folks: they ain't never been anywhere, an' they ain't never seen nothin'!"

Looks like a great social season coming at Hooper's Corners. Lem Hawkins, the county clerk, has just got in a nice fresh supply of marriage licenses.

* * *

Old Man Curtiss, who retired from active farming last year, says spring can't come any too soon to suit him. This will be the first year he's ever been in position to enjoy the spring fever thoroughly.

* * *

Matt Peasley says you can't be sure that spring is here until you've surprised the hired man throwing horseshoes in the cowlot for practice, when he was supposed to be planting the garden.

Caleb Pertwitt says you can't be sure that spring is here until the tourists begin going by, headed for California with seven kids piled in the back seat of a five-passenger flivver and a hound dog tied to the running board.

* * *

Ike Womble says you can't be sure spring is here until you get a price-list and a notice that the price of seed corn has suddenly gone sky high just as you've got to buy some.

* * *

But it's Lon Seegrist who says that the only sure sign is when the boys come home from school by the river road with their hair all wet, but vigorously denying they've been in swimming.

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The crinkled leaves later turned a bronzed color and rust soon made its appearance, which is characteristic of potash hunger. Rust caused the cotton plants to shed their leaves and to stop putting on fruit—resulting in decreased yields.

When potash was added to the mixtures containing phosphoric acid and nitrogen the results were favorable. The foliage was of a normal green color, the leaves did not crinkle or rust. The bolls were larger and better developed and the burs opened wider—making it easier to pick the cotton.

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